Energy spectrum of slow secondary ...

the energy spectra of the slow secondary electrons for various thicknesses θ. The spectra are different in character using silicon and beryllium backing; for silicon two peaks appear at a thickness of barium $\theta \simeq 1$ to 2 atomic layers, and at $\theta = \lambda = 12$ atomic layers the shape of the spectrum is that of pure barium (λ = zone of emission of slow electrons in barium); for beryllium backing the peaks are absent. This pattern is explained by the relative magnitudes of the secondary electron emission coeff. σ: σ for beryllium is smaller than for barium, while for silicon it is larger than for barium. It is shown that the maximum of the spectrum becomes established at $\theta \simeq 2$ atomic layers and its shape at $\theta \simeq \lambda$, irrespective of σ and η. This result agrees with the previous investigations. It is suggested that in order to obtain two peaks in the slow electron spectrum the following conditions should be fulfilled: 1) The instrument should be provided with an anti-dynatron electrode to cut off spurious electrons from the collector; 2) The electron work functions of the layers and the backing should be different, i.e. a sufficient difference in the contact potentials is essential; 3) The true coeff. of the secondary electron emission of the layer should

Card 2/3

BRONSHTEYN, I.M.; SHCHUCHINSKIY, Ya.M.

Energy distribution of the secondary electrons of the fourth period. Radiotekh. i elektron. 9 no.5:904-906 My '64.
(MIRA 17:7)

SHCHUCHKIN, Nikolay Vasil'evich.

Tests of electric balance plows. Moskva, Gosmashmetizdat, 1932. 67 p. (Trudy Vsesoiuznogo nauchno-issledovate'skogo instituta s. -kh. mashinostroeniia) (50-47642)

S483.S48
1. Plows. 2. Electricity in agriculture.

RAYEVSKIY, N.P.; VLADIMIROV, B.V.; KOMAROV, N.S., red.; SHCHUCHKIN, N.V., red.; SOLOV'YEV, D.I., red.; RABINOVICH, I.P., red.; VASILENKO, I.F., red.; MODEL', B.I., tekhn. red.

[Theory, design, and manufacture of agricultural machinery] Teoriia, konstruktsiia i proizvodstvo sel'skokhoziaistvennykh mashin. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry. Vol.7. [Atlas of general agricultural machinery parts] Atlas obshchikh detalei sel'khoziaistvennykh mashin. 1945. 335 p. (MIRA 14:6)
(Agricultural machinery)

L. SHCHUCHKIN, N.V.

2. USSR (600)

4. Agriculture

7. Discs and plows. Moskva, Mashgiz,1952

9. Monthly List of Russian Accessions, Library of Congress, March,1953.Unclassified.

[redacted], N. I.

Agricultural Machinery

Hanging attachments for tractor KhT3-7. Part 1: Suspension mechanism and cultivator-ridger KON-2-3, Sel'khozmashina, No. 1, 1952.

Monthly List of Russian Accessions, Library of Congress, April 1952. Unclassified.

SHCHUCHKIN, N. V.

The Committee on Stalin Prizes (of the Council of Ministers USSR) in the fields of science and inventions announces that the following scientific works, popular scientific books, and textbooks have been submitted for competition for Stalin Prizes for the years 1952 and 1953. (Sovetskaya Kultura, Moscow, No. 22-40, 20 Feb - 3 Apr 1954)

Name	Title of Work	Nominated by
Shchuchkin, N. V.	"Plowshares and Surface Plows"	All-Union Scientific Research Institute of Agricultural Machine Building

SO: W-30604, 7 July 1954

BRONSHTEYN, I.M.; SHCHUCHINSKIY, Ya.M.

Energy spectrum of slow secondary electrons in the adsorption of Ba on W. Radiotekh. i elektron 5 no.10:1650-1657 O '60. (MIRA 13:10)
(Adsorption) (Secondary electron emission)

RUBANIK, Vasiliy Vasil'yevich [Rubanyk, V.V.]; SHCHUDRYA, M.A., red.; GURVICH, O.G.[Hurvych, O.H.], tekhn. red.

[The young village of Ksaverovka] Molodits' Ksaverivky. Kyiv, Kyivs'ke oblasne knyzhkovo-gazetne vyd-vo, 1961. 34 p. (MIRA 14:11)

1. Predsedatel' kolkhoza "Druzhba", Kiyevskoy oblasti (for Rubanik). (Grebenki District--Rural conditions)

GINEVICH, G.I.; SKUE, G.I.; SHCHUGAREV, V.T.

Studying the process of continuous distilling-off of highly volatile substances in the production of plasticisers from dibutylphthalate and dioctylphthalate. Plast.massy no.3:64-67 '64. (MIRA 17:3)

SOV/137-58-10-20381

Translation from: Referativnyy zhurnal Metallurgiya, 1958, Nr 10 p 4 (USSR)

AUTHORS: Zhukovskiy, G. V., Shchugol', L. S.

TITLE: Ore-dressing Flowsheet at the Lebyazh'ye Deposit (Tekhnologiya obogashcheniya rud Lebyazhinskogo mestorozhdeniya)

PERIODICAL: Tr. N.-i. i proyektn. in-ta "Uralmekhanobr", 1957, Nr 1, pp 71-82

ABSTRACT: A description of processing procedures and indices for dressing ore at the Lebyazh'ye-deposit plant by magnetic separation and sintering is presented. A method to be used to extract apatite concentrate from the ore is noted.

M. M.

1. Ores--Processing 2. Minerals--Separation

Card 1/1

1. SHCHUGOREV, I.S., SHONDRA, I.V.

2. USSR (600)

4. Rodentia

7. Protecting fruit trees from rodent damage. Sad i og no. 11, 1952

9. Monthly List of Russian Accessions, Library of Congress, March,1953.Unclassified.

SHCHUKA, A., student

Mine without miners. Tekh.mol. 31 [illegible] '63. (MIRA 16:6)

1. Moskovskiy fiziko-tekhnicheskiy institut.
(Donets Basin--Coal mines and mining)
(Automation)

SHCHUKA, A.

Equations and eras. IUn.tekh. 8 no.11:56-58 N '63. (MIRA 16:12)

POLYAKOV, A.I., inzh.; NASEDKIN, V.V., inzh.; SHCHUKA, A.I., inzh.

Increase in the operational reliability of LaMont boilers.
Energetik 9 no.3:6-7 Mr '61. (MIRA 14:7)
(Boilers)

SHYSHKA, M.I., inzh.

Useful suggestions. Avtom., telem. i sviaz' 8 no.12:36 D '64.
(MIRA 18:1)

1. 4-ya distantsiya signalizatsii i svyazi Kuybyshevskoy dorogi.

SOV/138-59-4-15/26

AUTHOR: Shchuka, S.M.

TITLE: A Conference on Co-ordination of Research and Construction Work in the Rubber Industry (Soveshchaniye po koordinatsii planov nauchno-issledovatel'skikh i opytno-konstruktorskikh rabot v rezinovoy promyshlennosti)

PERIODICAL: Kauchuk i Rezina, 1959, Nr 4, pp 48-49 (USSR)

ABSTRACT: The Nauchno-issledovatel'skiy institut rezinovoy promyshlennosti (Research Institute for the Rubber Industry, NIIRP) convened a conference held on March 4th - 7th, 1959 on co-ordination of 1959 programme of research and construction work of the NIIRP, NIIR, the "Rezinoproyekt" Institute, Tsentral'naya laboratoriya (Central Laboratory, TsZL) and the construction and technological departments (KTC) of the plants producing rubber articles. The conference was organised by Gosudarstvennyy Komitet Soveta Ministrov SSSR po khimii (State Committee of the Council of Ministers of the USSR for Chemistry) in conjunction with several councils of national economy etc. More than 200

Card 1/3

A Conference on Co-ordination of Research and Construction Work in the Rubber Industry

representatives attended the meeting. The lectures dealt with experimental work carried out by TsZL and KTO during 1958 and plans for 1959. The Deputy Director of the NIIRP, S.V. Burov, reviewed the work on new plants and technological processes in the rubber goods industry, on conveyor belts and synthetic fibres. He also discussed the processes of ageing and stabilisation of rubbers by the application of heat, light and irradiation, radiation vulcanisation, etc. The Deputy Director of NIIR, V.I. Novikov, discussed similar topics, as well as the organisation of work in the rubber footwear industry and in medicine, and new uses of synthetic rubber. The Chief Engineer of the Moscow Factory "Kauchuk", V.K. Smirnov, the Deputy Chief Engineer of the Leningrad Factory RTI, S.K. Turkin, the Chief Engineer of the Sverdlovsk Factory RTI, N.I. Kosynets, and others discussed complex mechanisation and automation in the industry producing rubber articles, mechanisation of transport, automation of supply, and weighing of liquid and granular ingredients, etc.

SOV/138-59-4-15/26

A Conference on Co-ordination of Research and Construction Work in the Rubber Industry

Difficulties encountered by the industry were discussed, e.g. the distribution of new types of raw materials to the various factories. The conference was divided into two sections: a section for construction works and a chemical technology section, which discussed their research and construction plans for 1959.

Card 3/3

S/138/60/000/007/010/010
A051/A029

AUTHOR: Shchuka, S.M.

TITLE: A Meeting Held on the Coordination of Scientific-Research Work and Experimental-Designing in the Rubber Industry

PERIODICAL: Kauchuk i Rezina, 1960, No. 7, pp. 51 - 52

TEXT: A scientific-technical meeting was held at the Scientific-Research Institute of the Rubber Industry form March 22 - 25, 1960, on the problems of coordinating the plans of the scientific-research work and experimental-designing of the NIIRP, NIIR, the "Rezinoproyekt", the Central Plant Laboratories, designing-technological departments and departments of automation and mecharization of commercial rubber products and rubber products for general consumption for the year 1960. The meeting was organized by the State Committee of the USSR Council of Ministers on Chemistry according to the wishes of a number of National Economy Councils, plants and by the decision of the meeting held the previous year on similar problems. The papers submitted and speeches held summarized the work and plans for 1960. Ye.M. Rabkin, head engineer of the Administration of Tires and Rubber products of the State Committee on Chemistry, held the introductory speech

S/138/60/000/007/010/010
A051/A029

A Meeting Held on the Coordination of Scientific-Research Work and Experimental-Designing in the Rubber Industry

on the major tendencies in the development of the rubber industry; S.V. Burov, deputy director of the scientific division of the NIIRP, read a paper on the results of the scientific research work at the NIIRP and the general paths taken by the institute in this connection. V.I. Novikov, deputy director heading the scientific section of NIIR, discussed the possibilities of increasing the mechanization level of rubber footwear production, latex articles and articles for medical purposes and the study of new synthetic latexes. B.M. Smirina, head engineer at the "Rezinoproyekt" Institute, reported on the new processes of commercial rubber articles production to be introduced at the new rubber plants. Reference was made to the rubber article plant being built as part of the Volga Chemical Combine. A. S. Novikov of the NIIRP presented a paper on the development of new synthetic rubbers both in the Soviet Union and abroad. N.N. Lezhnev of the NIIShP reported on the demands placed on carbon blacks in the rubber industry in the light of modern views of the physico-chemical nature of filling. V.K. Smirnov of the Moscow "Kauchuk" Plant, P.I. Tikhomirov (Leningrad Rubber Article Plant), V.I. Yudin (Sverdlovsk RTI Plant), T.N. Titarenko (Kursk Rubber Plant), M.S. Kogan (Yaro-

Card 2/4

A Meeting Held on the Coordination of Scientific-Research Work and Experimental-Designing in the Rubber Industry

slavl' Rubber Article Plant) and others, reported on the development of complex mechanization and automation of the production of molded and unmolded rubber products, the mechanization of transportation in the various technological operations within the shops and between shops and the loading and unloading operations, automating the supply and weighing of liquid and loose ingredients to the mixer, perfecting the technology of production, introducing new types of raw material and new types of articles. The MARS-200, an automatic machine for recording and controlling the temperature on the electrical press, has been installed at the "Krasnyy Bogatyr'" and "Kauchuk" Plants. At the latter a press with removable plates and cassette press-forms is being installed. A new continucus vulcanizer of the open type for vulcanizing molded sponge rubber articles in an air medium and an automatic program control of the vulcanization of rubber bales in boilers were introduced at the Leningrad Rubber Article Plant. At the Kazan' Rubber Article Plant a fissureless method for the production of pressure sleeves was introduced. Certain types of rubber footwear made on a conveyor belt are being manufactured at the "Krasnyy Treugol'nik" and "Krashyy Bogatyr'" Plants. The mass-production of

A Meeting Held on the Coordination of Scientific-Research Work and Experimental-Designing in the Rubber Industry

variation belts using caprone fabric has been introduced for application at the CK-3 (SK-3) combine. New rubbers such as CKC-30 (SKS-30), APM-15 (ARM-15), soft nitrile rubbers of the CKH-40 (SKN-40) type and CKH-26 (SKN-26) have been manufactured by a number of plants. Some of the rubber article plants have introduced the production of thermal-resistant material ФКС (FKS) and molded articles from fluorine rubber-based material. The "Krasnyy Treugol'nik" Plant has developed the construction of a semi-automatic machine of the turning type for the vulcanization of shoes. The "Krasnyy Bogatyr'" Plant has introduced the production of galoshes with inserted profile parts. It was decided to organize special designing bureaus at the various rubber plants, which would deal with furthering the development of molded products, sleeves, transportation belts, latex technology and to erect special plants for the production of non-standard equipment and conveyor belts for the rubber industry. Further decisions were made on the installation of equipment for footwear molds, introduction of capacities for special-purpose synthetic rubber, for chemical fibres for the industry of commercial rubber products and rubber footwear.

L 4402-66 EWT(1)/FCC RB/GW

ACC NR: AP5025486 SOURCE CODE: UR/0203/65/005/005/0941/0942

30
B

AUTHOR: Shchuka, T. I.

ORG: Arctic and Antarctic Scientific Research Institute (Arkticheskiy i Antarkticheskiy nauchno-issledovatel'skiy institut)

TITLE: Riometer observations of shifting regions of anomalous absorption

SOURCE: Geomagnetizm i aeronomiya, v. 5, no. 5, 1965, 941-942

TOPIC TAGS: aurora, ionospheric absorption, geomagnetic disturbance, geomagnetic field

ABSTRACT: Two riometers were operated at the Dickson Island Arctic Station during July and August, 1964, to record ionospheric absorption of extraterrestrial radio emission as a function of aurora borealis activity. Both riometers were tuned to 32 Mc and calibrated at a common "quiet day" reference level. One antenna was aimed north and the other was aimed about 50° west of north, so that a strip of the ionosphere approximately 490 km long was under observation. Comparison of dips in simultaneously received signals during auroral activity showed where local absorption minima and maxima were occurring within the observed region. Results of 106 recordings showed that locations of absorption maxima and minima were functions of auroral

UDC: 550.385.4

Card 1/2

L 4402-66

ACC NR: AP5025486

level; maxima appeared north of the island during low activity and shifted to the south during periods of high activity. Orig. art. has: 1 figure and 1 table. [SH]

SUB CODE: ES, EC/ SUBM DATE: 16Dec64/ ORIG REF: 001/ OTH REF: 000/ ATD PRESS: 4126

Card 2/2

L 9782-66 EWT(1)/FCC/EWA(h) GW

ACC NR: AF5025484 SOURCE CODE: UR/0203/65/005/005/0937/0939

45
B

AUTHOR: Shchuka, T. I.

ORG: Arctic and Antarctic Scientific Research Institute (Arkticheskiy i Antarkticheskiy nauchno-issledovatel'skiy institut)

TITLE: Sporadic ionization of the aurora polaris type in region E

SOURCE: Geomagentizm i aeronomiya, v. 5, no. 5, 1965, 937-939

TOPIC TAGS: ionosphere, e layer, ionization, aurora

ABSTRACT: A single manual on the vertical probing of the ionosphere, (J. W. Wright, R. W. Knecht, C. Davis, Rukovodstvo po vertikal'nomu zondirovanyu ionosfery, IL, 1957) was accepted by almost the entire network of ionospheric stations. Still, the interpretation of ionograms during classification of sporadic reflections in the region E seems to be far from uniform. For instance, stations Luleo and

UDC: 550. 388.2

1/3

ACC NR: AP5025484

Salechard, having similar geomagnetic latitude, interpreted the percentage of the E_{sa} (sporadic ionization of the aurora polaris type) appearance, during Jan., Feb., Nov., and Dec., 1958, as 40 and 1.4%, respectively. This large difference could not be caused only by differences in the ionospheric parameters above these stations. They were probably caused by subjective personal opinions of the specialists treating the material. An attempt was made to classify various types of E_{sa} and outline their characteristics in order to facilitate and unify their identification. The comparison of ionograms and ascafilms showed that 3 types of E_{sa} occurred most often during reflection from sporadic ionization related with aurora polaris: (1) the classical type of E_{sa}, fully corresponding to the definition given in the J. W. Wright et al. manual; (2) E_{sa} during elevated absorption, appearing at high values of minimal frequency of reflections (it is usually characterized by a decrease in diffusion and scattering and almost complete disappearance of stratification in the upper part of the path); and (3) type E_{sa}, very similar in appearance to E_s and characterized by a gradual increase in the height of the reflection path with increased frequency (it differs from E_s in that reflections are caused by entirely different phenomena in the lower ionosphere). The following characteristics of these reflections should be

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L 9782-66
ACC NR: AF5025484

considered in order to facilitate their identification from ionograms: (1) dependence of the outside appearance on amplification (e.g. during increase in absorption of the ionosphere, the maximum amplification results in the correct identification) and (2) rapid changes in an outside appearance (occasionally a different type appears for a short time, to change rapidly into a true type). Orig. art. has: 3 figures and 1 table.

SUB CODE: 04,03/SUBM DATE: 14Nov64/ OTHER: 005

3/3

MEDVEDEVA, M.N.; KUGENEV, P.V.; SHCHUKA, V.P.

Use of paper chromatography for determination of amino acids on a large scale. Lab.delo 7 no.9:3-8 S '61. (MIRA 14:10)

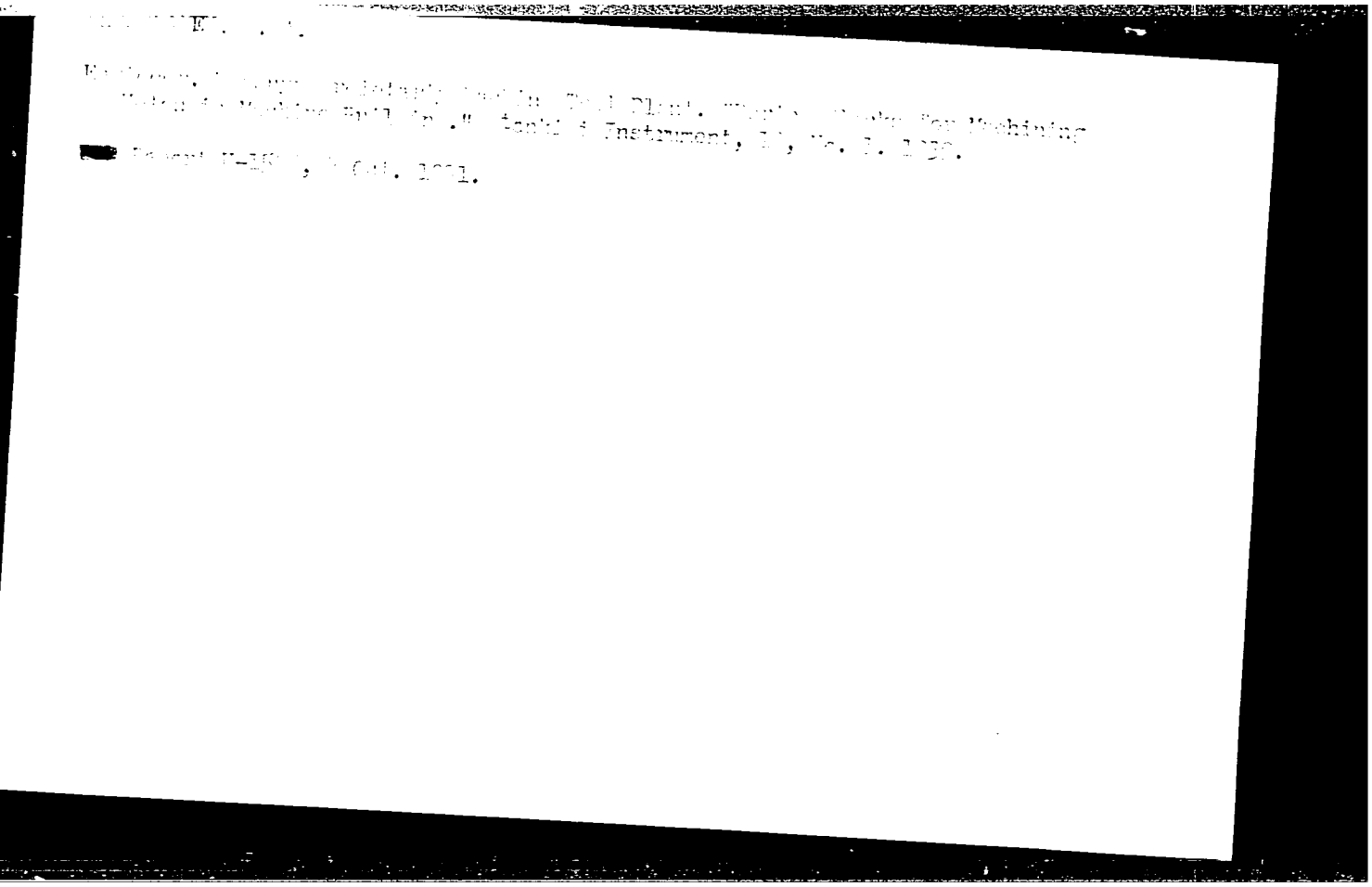
1. Kafedra molochnogo dela Moskovskoy sel'skokhozyaystvennoy akademii imeni Timiryazeva.
(AMINO ACIDS) (PAPER CHROMATOGRAPHY)

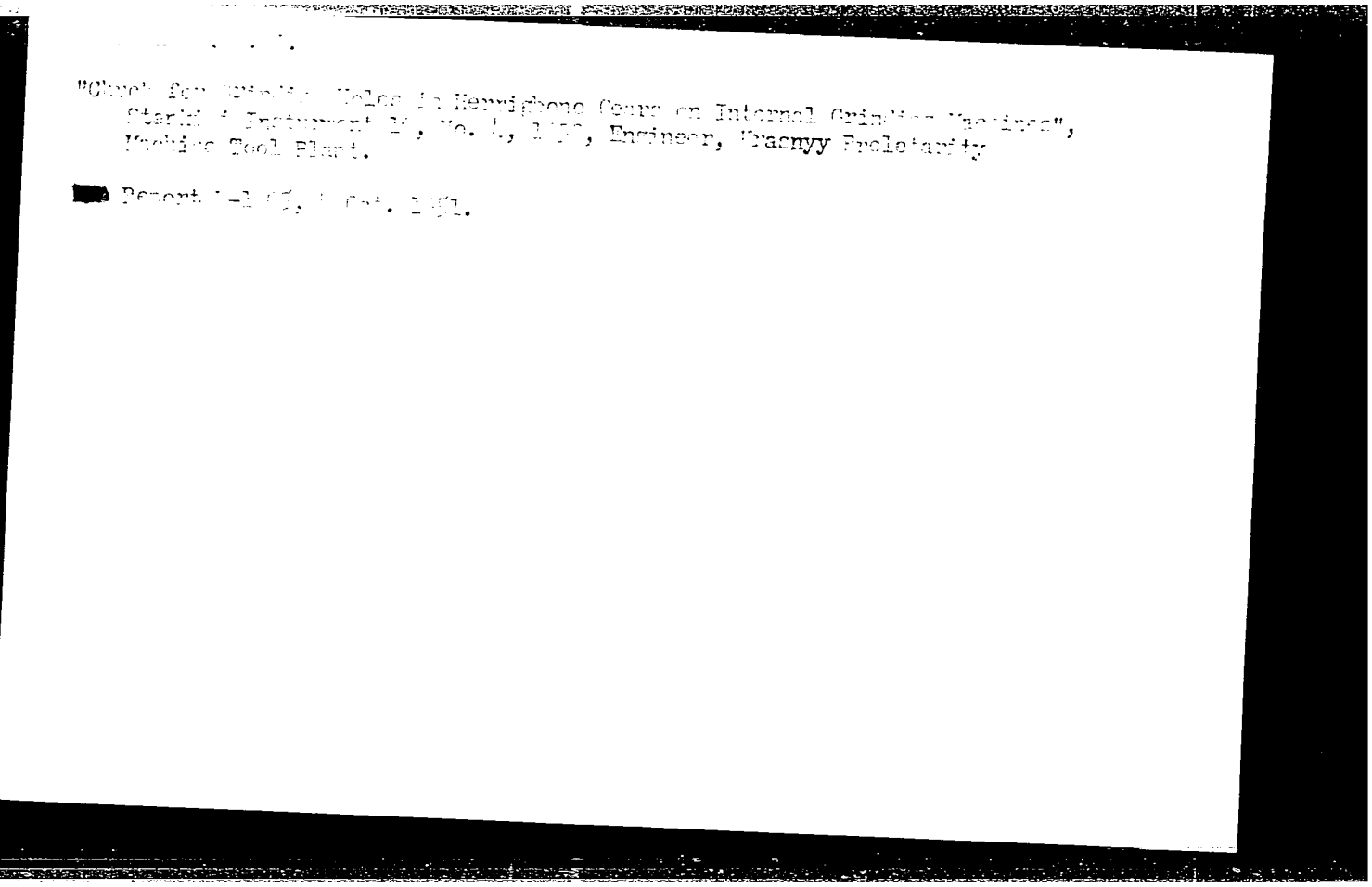
Shchukakidze, N.D.

Distr: 4E2c

Concentration of antimonite and polymetallic antimony ores. K. T. Vartanyan and N. D. Shchukakidze. *Sbornik Nauch.-Tekh. Inform., Ministerstvo Geol. i Okhrany Nedr* 1955, No. 1, 151; *Referat. Zhur., Met.* 1956, Abstr. No. 7106.—Flotation of a quartz-antimonite ore contg.: Sb 8.30, As 0.49, and Fe 4.5% gave a concentrate contg. 37.66% Sb (extn. of Sb 93.55%). After one retreatment the content of Sb was 45.51% (extn. 90.64%). H_2SO_4 had a very favorable effect, an alk. medium a negative effect on the flotation of antimonite. In flotation of an ore contg. Sb 8.33, Pb 3.11, As 2.38, Zn 0.3, and Fe 7.78%, concns. Sb, Pb, and As were much lower when H_2SO_4 was used than when soda was used. The sulfuration of the tailings of rough flotation did not increase the extn. of Sb and Pb; the concentrate contained Sb 37.69% (extn. 83%) and Pb 7.81% (extn. 70%). A. N. Pestoff.

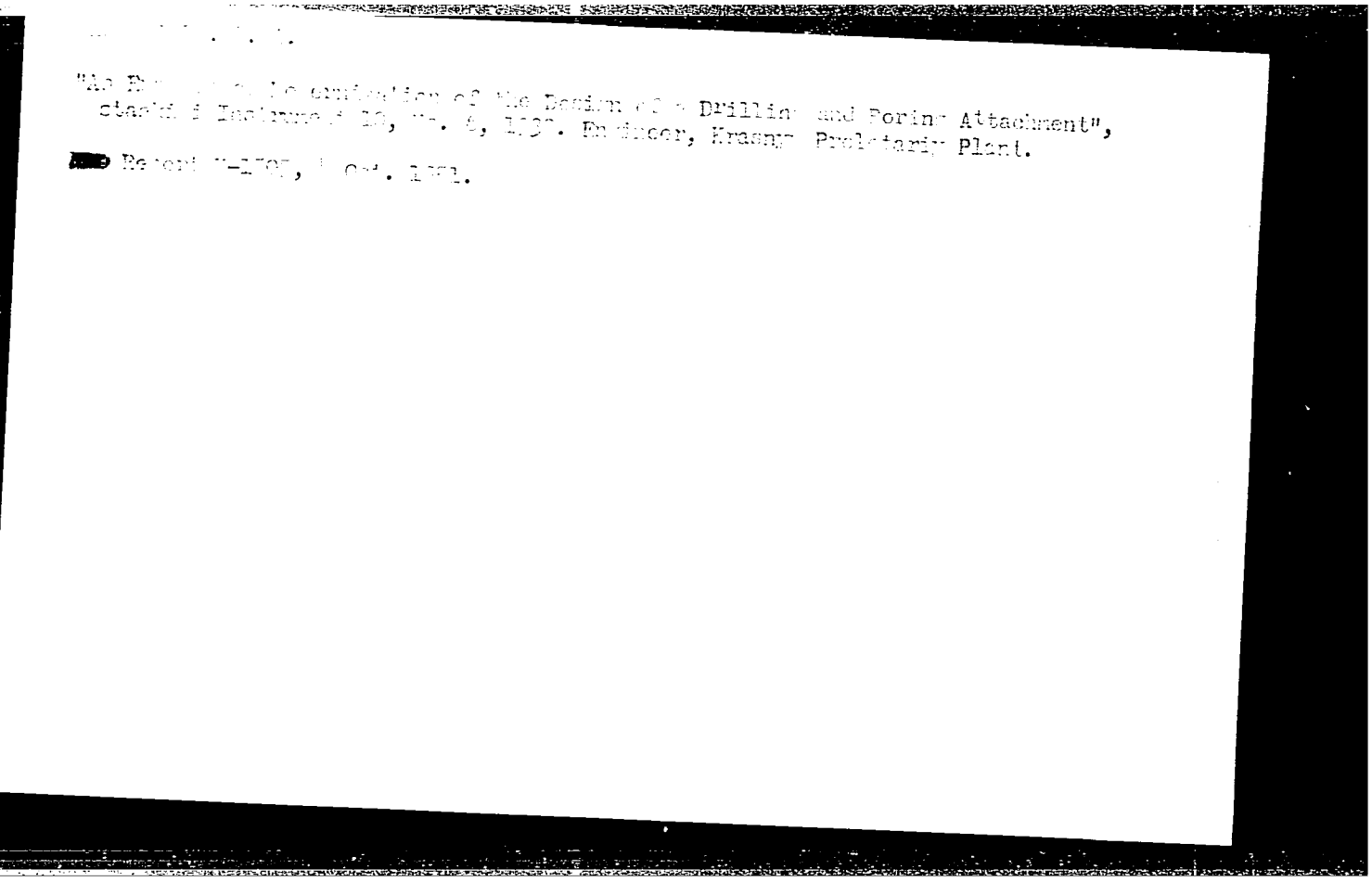
2
1-Fra
1
1/1





"[illegible] Role in Herringbone Gears on Internal Grinding Machines", Starik i Instrument, [illegible], Engineer, Pracnyy Proletariy Moskva Tool Plant.

[illegible] Report U-2[illegible], [illegible] Oct. 1951.



. . . .

"An E[illegible] to Optimization of the Design of a Drilling and Boring Attachment", Standard Instrument, No. 6, 1939. Engineer, Krasnyy Proletariy Plant.

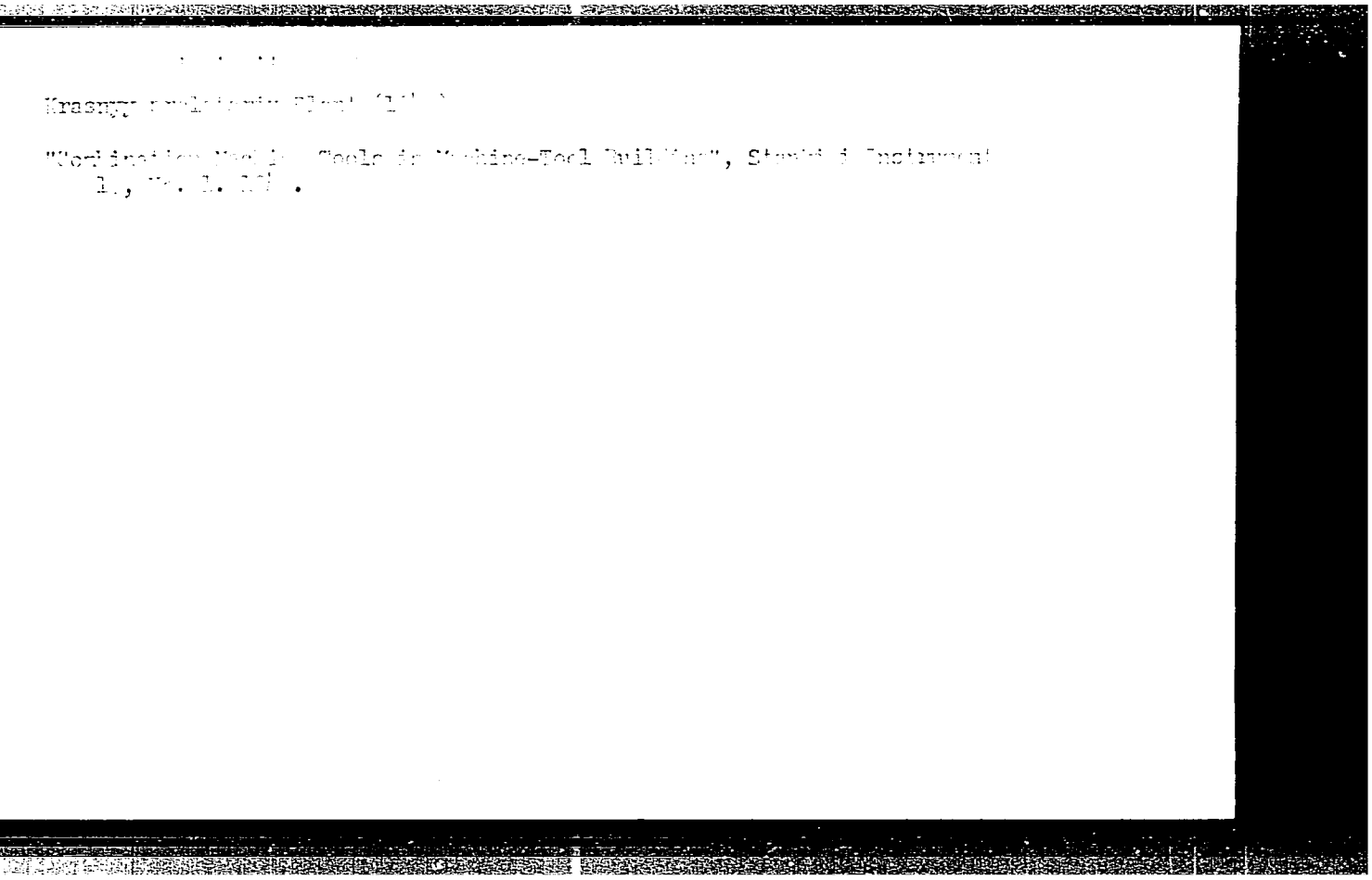
Report [illegible], Oct. 1941.

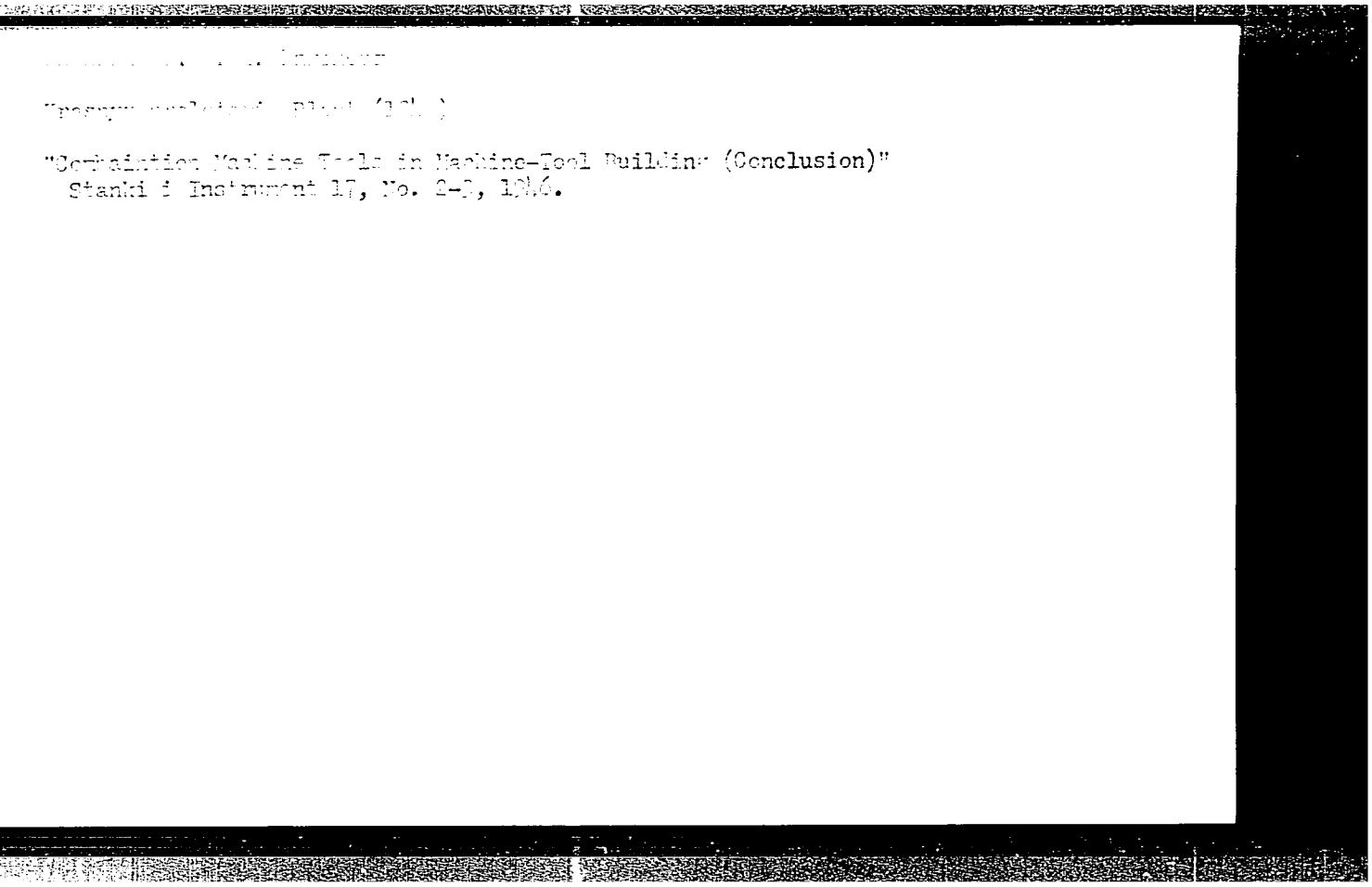
[illegible]

[illegible] (Krasnyy Proletariy Plant)

"[illegible] Production of the Krasnyy Proletariy Plant." Stanki i Instrument Vol. [illegible], No. 1-2, 19[illegible].

[illegible] 19





"Combination Machine Tools in Machine-Tool Building (Conclusion)"
Stanki i Instrument LT, No. 2-3, 1946.

USSR/Engineering Feb 1948
Machines, Milling
Machinery - Construction

"Mechanization of the Process for Finishing Multi-profile Parts for a Multiple Cutter Milling Duplicating Machine," B. A. Shchukarev, Laureate of Stalin Prize, 6 pp

"Stanki i Instrument" No 2

Until now milling duplicating machines have not been mass produced due to high degree of accuracy necessary in various parts of machine. Describes accurate machine method to produce parts for milling duplicating machines permitting mass production of these machines in near future.

76T38

[redacted], ...

...otochnyi metod v krupnoseriinom proizvodstve; iz opyta Moskovskogo ordena Lenina stankostroitel'nogo zavoda "Krasnyi proletarii." Moskva, Mashgiz, 1949. 201 p. illus.

Assembly-line methods in a large-scale serial production; from the experience of the Moscow Lenin's Order machine-tool construction plant "Krasnyi proletarii"

DLC: TC0. A75=5

SO: Manufacturing and Mechanical Engineering in the Soviet Union, Library of Congress, 1953

B. A. [illegible] and B'LOTIN, KH. L.

O konkurse no luchshie prisposobleniia. (Vestn. Mash., 1949, no. 6, p. 49-54)
Competition organized by "VNITO"ASH"

Competition for better equipment.

DLC: TN4.V4

SO: Manufacturing and Mechanical Engineering in the Soviet Union, Library of Congress, 1953.

SHCHUKAREV, B.A., laureat Stalinskoy premii.

Designing highly efficient devices which reduce the set-up time. [Izd] LONITOMASH 24:177-188 '51. (MLRA 8:2)
(Machine tools--Accessories and attachments)

SHCHUKAREV, B. A.

Machinery Industry

New method of rapid preparation for machine production,
N. A. Porvatov, Reviewed by B. A. Shchukarev, Vest. mash. 33 No. 2, 1953

Monthly List of Russian Accessions, Library of Congress, June 1953, Uncl.

SHCHUKAREV, M.N., inzh. (Saratov)

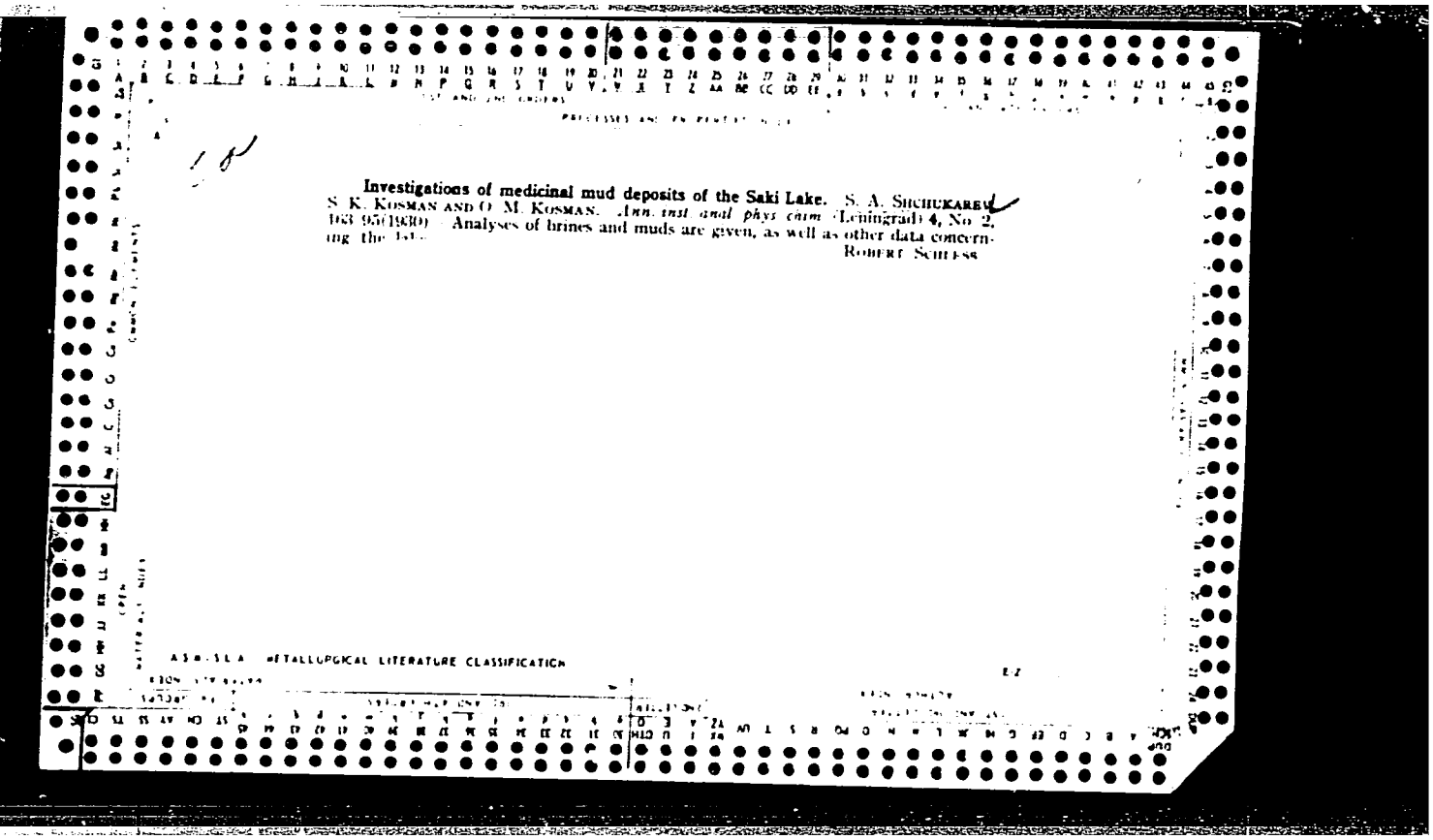
Advanced techniques and equipment in the operations of the State Institute for Design and Planning of Synthetic Liquid Fuel and Gas Plants in the East. Stroi. truboprov. 6 no. 2:5-6 F '61. (MIRA 14:5)

(Gas research)

[redacted], S., [redacted]

[redacted] Ivanovich Semishin, 190[redacted]. [redacted]
i khim. tekh. 7 no.3:528 '64.

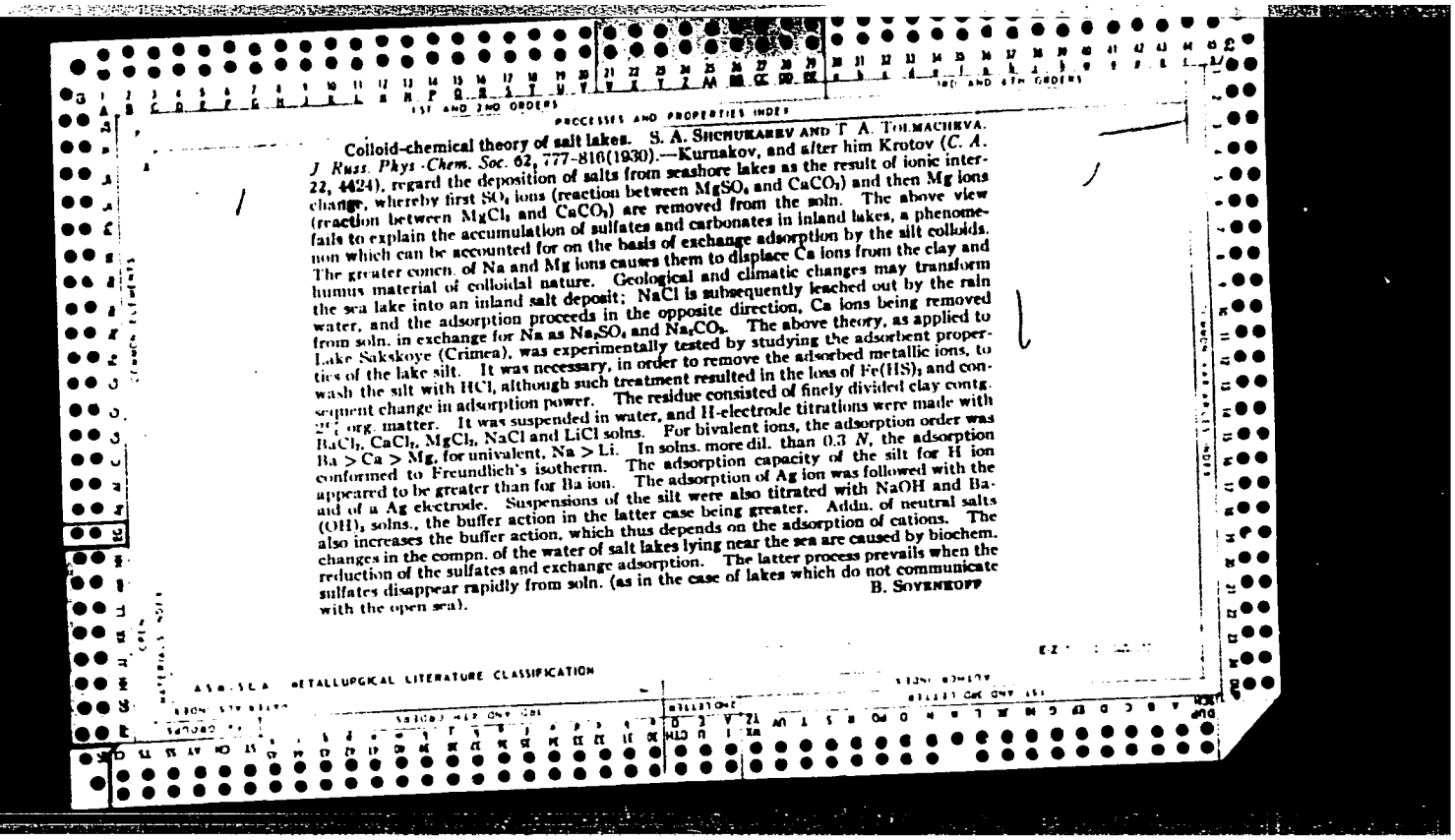
[redacted]



Investigations of medicinal mud deposits of the Saki Lake. S. A. Shchukarev, S. K. Kosman and O. M. Kosman. *Inst. anal. phys. chim.* (Leningrad) **4**, No. 2, 163–95(1930). Analyses of brines and muds are given, as well as other data concerning the lake.

Robert Schiess

A58-SLA METALLURGICAL LITERATURE CLASSIFICATION

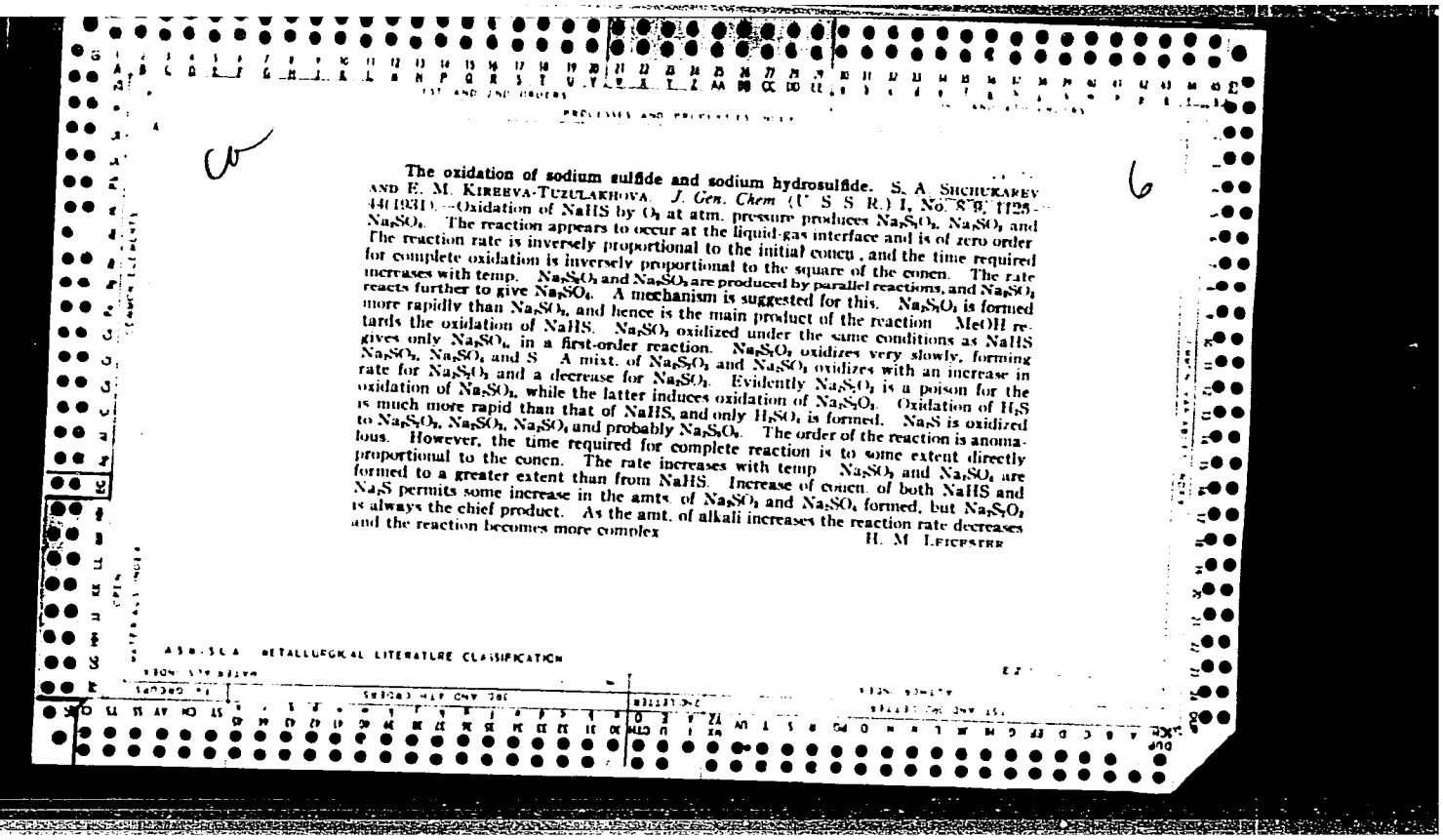


PROCESSES AND PROPERTIES INDEX

Colloid-chemical theory of salt lakes. S. A. Shchukarev and T. A. Tolmacheva. *J Russ. Phys.-Chem. Soc.* 62, 777–816(1930).—Kurnakov, and after him Krotov (*C. A.* 22, 4424), regard the deposition of salts from seashore lakes as the result of ionic interchange, whereby first SO_4 ions (reaction between $MgSO_4$ and $CaCO_3$) and then Mg ions (reaction between $MgCl_2$ and $CaCO_3$) are removed from the soln. The above view fails to explain the accumulation of sulfates and carbonates in inland lakes, a phenomenon which can be accounted for on the basis of exchange adsorption by the silt colloids. The greater concn. of Na and Mg ions causes them to displace Ca ions from the clay and humus material of colloidal nature. Geological and climatic changes may transform the sea lake into an inland salt deposit; NaCl is subsequently leached out by the rain water, and the adsorption proceeds in the opposite direction, Ca ions being removed from soln. in exchange for Na as Na_2SO_4 and Na_2CO_3. The above theory, as applied to Lake Sakskoye (Crimea), was experimentally tested by studying the adsorbent properties of the lake silt. It was necessary, in order to remove the adsorbed metallic ions, to wash the silt with HCl, although such treatment resulted in the loss of $Fe(HS)_3$ and consequent change in adsorption power. The residue consisted of finely divided clay contg. 2% org. matter. It was suspended in water, and H-electrode titrations were made with $BaCl_2$, $CaCl_2$, $MgCl_2$, NaCl and LiCl solns. For bivalent ions, the adsorption order was Ba > Ca > Mg, for univalent, Na > Li. In solns. more dil. than 0.3 *N*, the adsorption conformed to Freundlich's isotherm. The adsorption capacity of the silt for H ion appeared to be greater than for Ba ion. The adsorption of Ag ion was followed with the aid of a Ag electrode. Suspensions of the silt were also titrated with NaOH and Ba$(OH)_2$ solns., the buffer action in the latter case being greater. Addn. of neutral salts also increases the buffer action, which thus depends on the adsorption of cations. The changes in the compn. of the water of salt lakes lying near the sea are caused by biochem. reduction of the sulfates and exchange adsorption. The latter process prevails when the sulfates disappear rapidly from soln. (as in the case of lakes which do not communicate with the open sea).

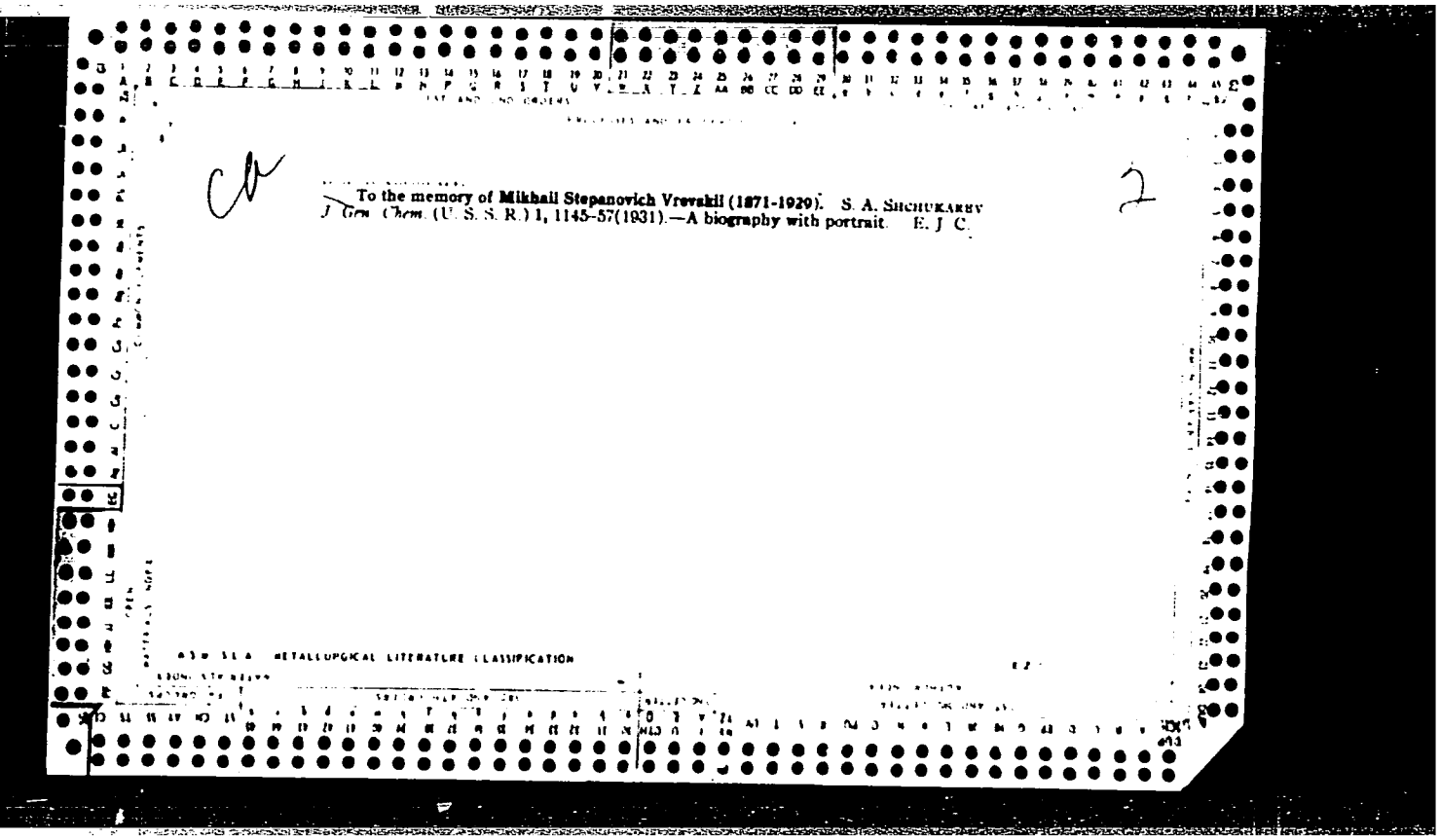
B. Sovenkoff

METALLURGICAL LITERATURE CLASSIFICATION

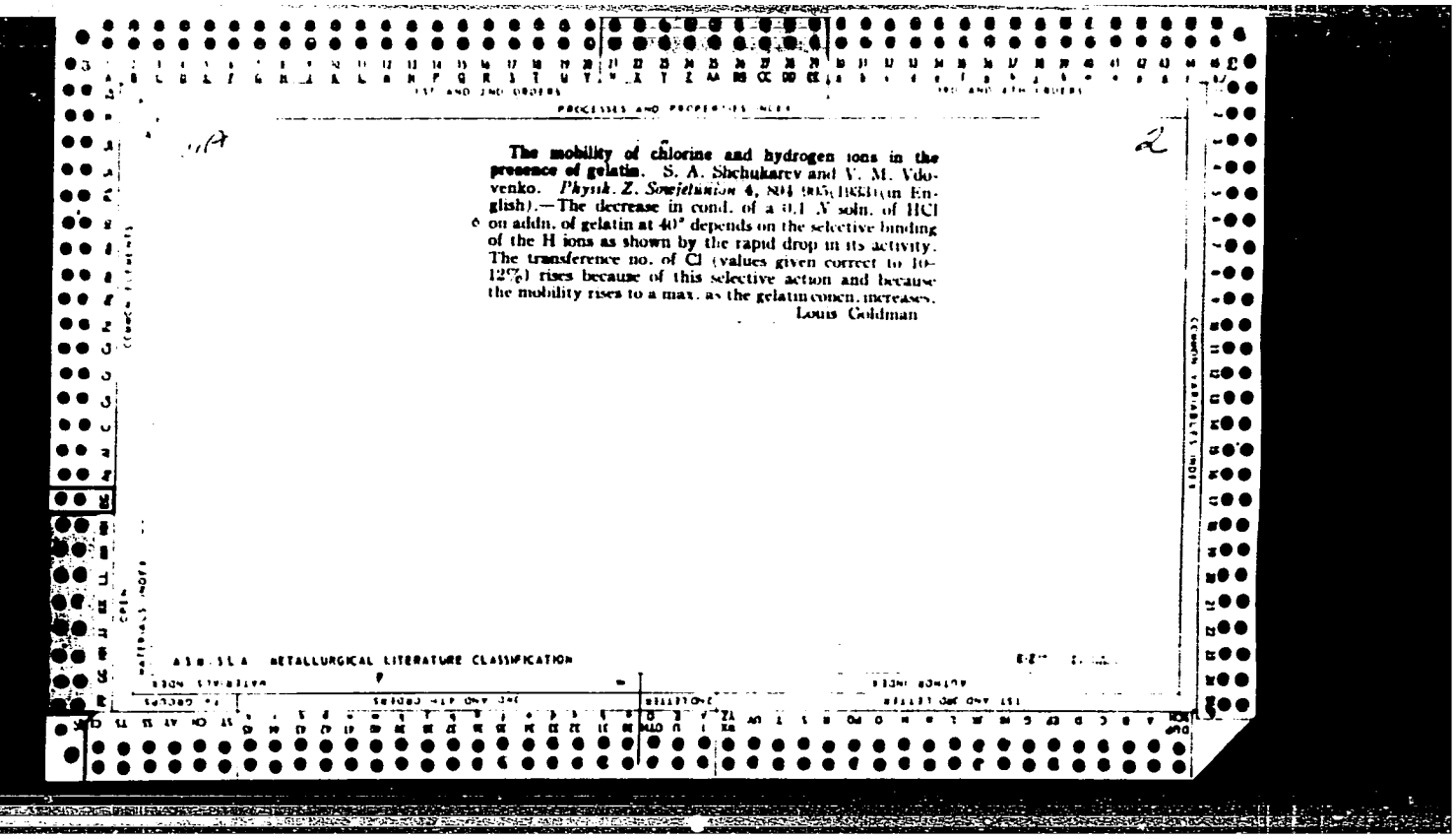


The oxidation of sodium sulfide and sodium hydrosulfide. S. A. Shchukarev and E. M. Kireeva-Tuzulakhova. *J. Gen. Chem.* (U. S. S. R.) 1, No. 8, 1125-44(1931).—Oxidation of NaHS by O_2 at atm. pressure produces $Na_2S_2O_3$, Na_2SO_3 and Na_2SO_4. The reaction appears to occur at the liquid-gas interface and is of zero order. The reaction rate is inversely proportional to the initial concn., and the time required for complete oxidation is inversely proportional to the square of the concn. The rate increases with temp. $Na_2S_2O_3$ and Na_2SO_3 are produced by parallel reactions, and Na_2SO_3 reacts further to give Na_2SO_4. A mechanism is suggested for this. $Na_2S_2O_3$ is formed more rapidly than Na_2SO_3, and hence is the main product of the reaction. MeOH retards the oxidation of NaHS. Na_2SO_3 oxidized under the same conditions as NaHS gives only Na_2SO_4, in a first-order reaction. $Na_2S_2O_3$ oxidizes very slowly, forming Na_2SO_3, Na_2SO_4 and S. A mixt. of $Na_2S_2O_3$ and Na_2SO_3 oxidizes with an increase in rate for $Na_2S_2O_3$ and a decrease for Na_2SO_3. Evidently $Na_2S_2O_3$ is a poison for the oxidation of Na_2SO_3, while the latter induces oxidation of $Na_2S_2O_3$. Oxidation of H_2S is much more rapid than that of NaHS, and only H_2SO_4 is formed. Na_2S is oxidized to $Na_2S_2O_3$, Na_2SO_3, Na_2SO_4 and probably $Na_2S_4O_6$. The order of the reaction is anomalous. However, the time required for complete reaction is to some extent directly proportional to the concn. The rate increases with temp. Na_2SO_3 and Na_2SO_4 are formed to a greater extent than from NaHS. Increase of concn. of both NaHS and Na_2S permits some increase in the amts. of Na_2SO_3 and Na_2SO_4 formed, but $Na_2S_2O_3$ is always the chief product. As the amt. of alkali increases the reaction rate decreases and the reaction becomes more complex.

H. M. Leicester

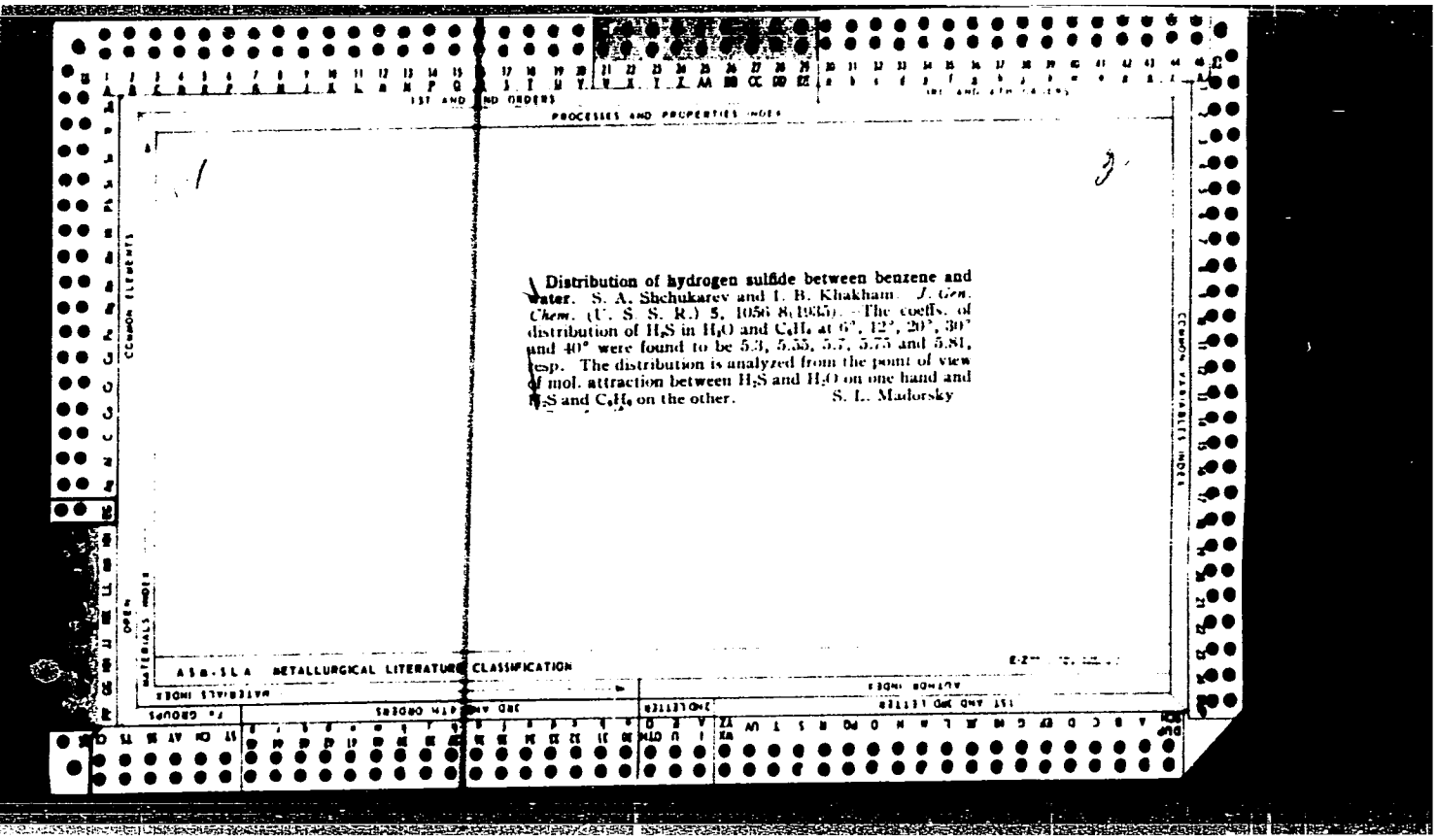


To the memory of Mikhail Stepanovich Vrevskii (1871-1929). S. A. Shchukarev *J. Gen. Chem.* (U. S. S. R.) 1, 1145-57(1931).—A biography with portrait. E. J. C.

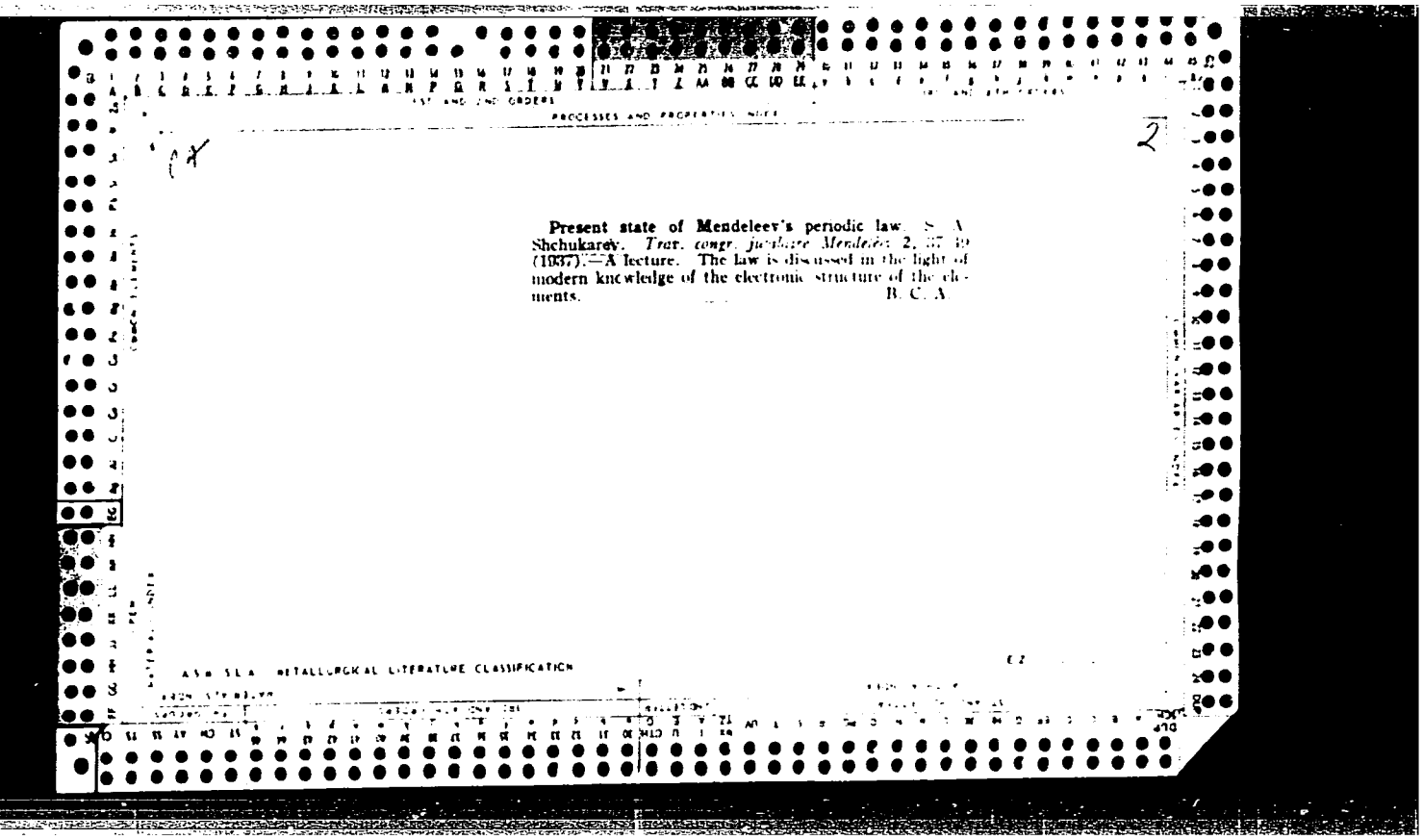


The mobility of chlorine and hydrogen ions in the presence of gelatin. S. A. Shchukarev and V. M. Vdovenko. *Physik. Z. Sowjetunion* 4, 804-9(1933)(in English).—The decrease in cond. of a 0.1 *N* soln. of HCl on addn. of gelatin at 40° depends on the selective binding of the H ions as shown by the rapid drop in its activity. The transference no. of Cl (values given correct to 10-12%) rises because of this selective action and because the mobility rises to a max. as the gelatin concn. increases.

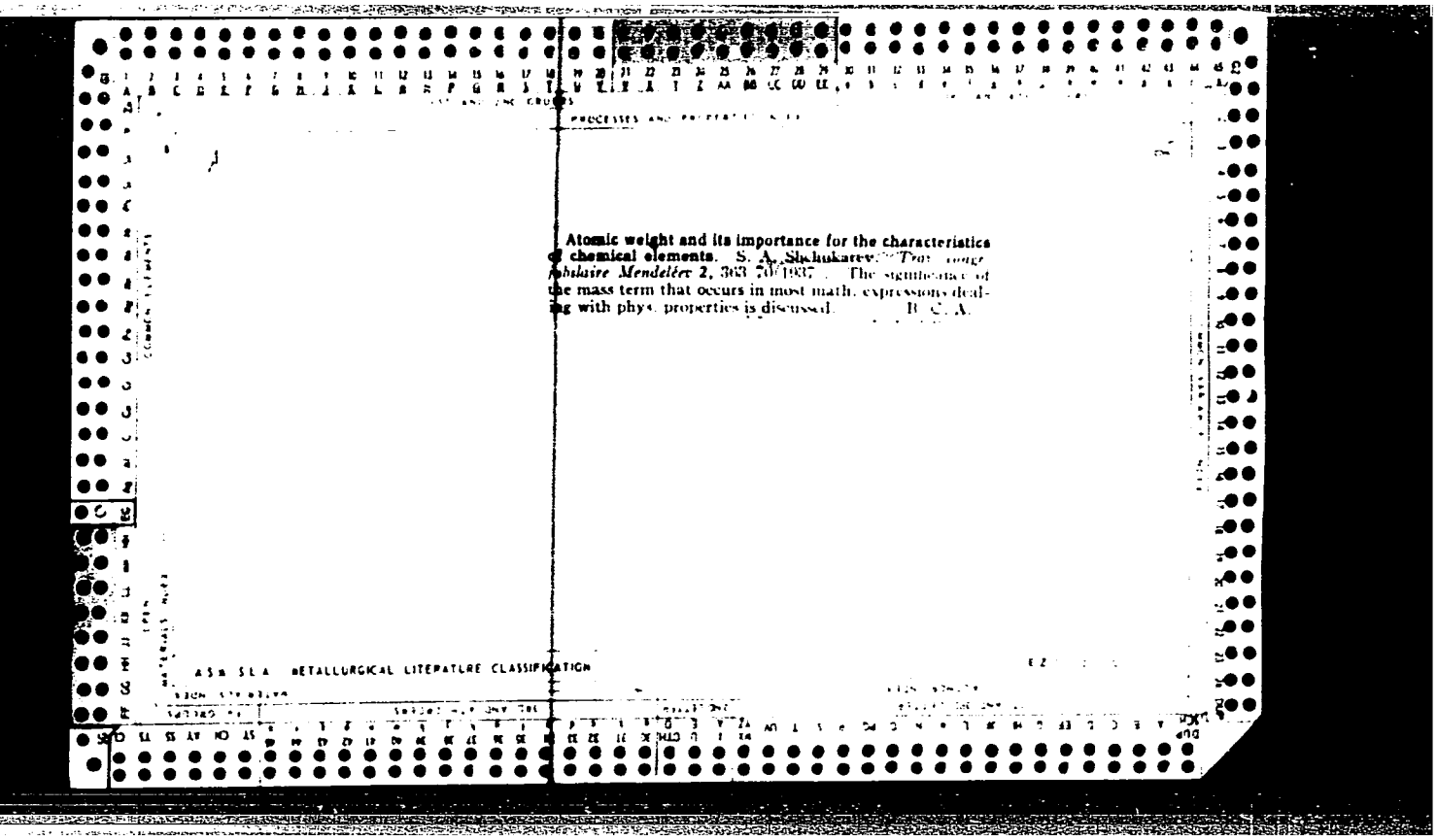
Louis Goldman



Distribution of hydrogen sulfide between benzene and water. S. A. Shchukarev and I. B. Khakham. *J. Gen. Chem.* (U. S. S. R.) 5, 1056-8(1935).—The coeffs. of distribution of H_2S in H_2O and C_6H_6 at 6°, 12°, 20°, 30° and 40° were found to be 5.3, 5.55, 5.7, 5.75 and 5.81, resp. The distribution is analyzed from the point of view of mol. attraction between H_2S and H_2O on one hand and H_2S and C_6H_6 on the other. S. L. Madorsky



Present state of Mendeleev's periodic law. S. A. Shchukarev. *Trav. congr. jubilaire Mendeléev* 2, 37–49 (1937).—A lecture. The law is discussed in the light of modern knowledge of the electronic structure of the elements. B. C. A.



Atomic weight and its importance for the characteristics of chemical elements. S. A. Shchukarev. *Trav. congr. chimistes Mendeléev* **2**, 363-70(1937). The significance of the mass term that occurs in most math. expressions dealing with phys. properties is discussed. B. C. A.

ASM SLA METALLURGICAL LITERATURE CLASSIFICATION

SHCHUKAREV, S.A.

The study of definite and indefinite compounds in the works of Russian scientists. S. A. Shchukarev. *Vestnik Leningrad. Univ.* 2, No. 5, 6 [illegible]ical review. J. Rovtar Leach

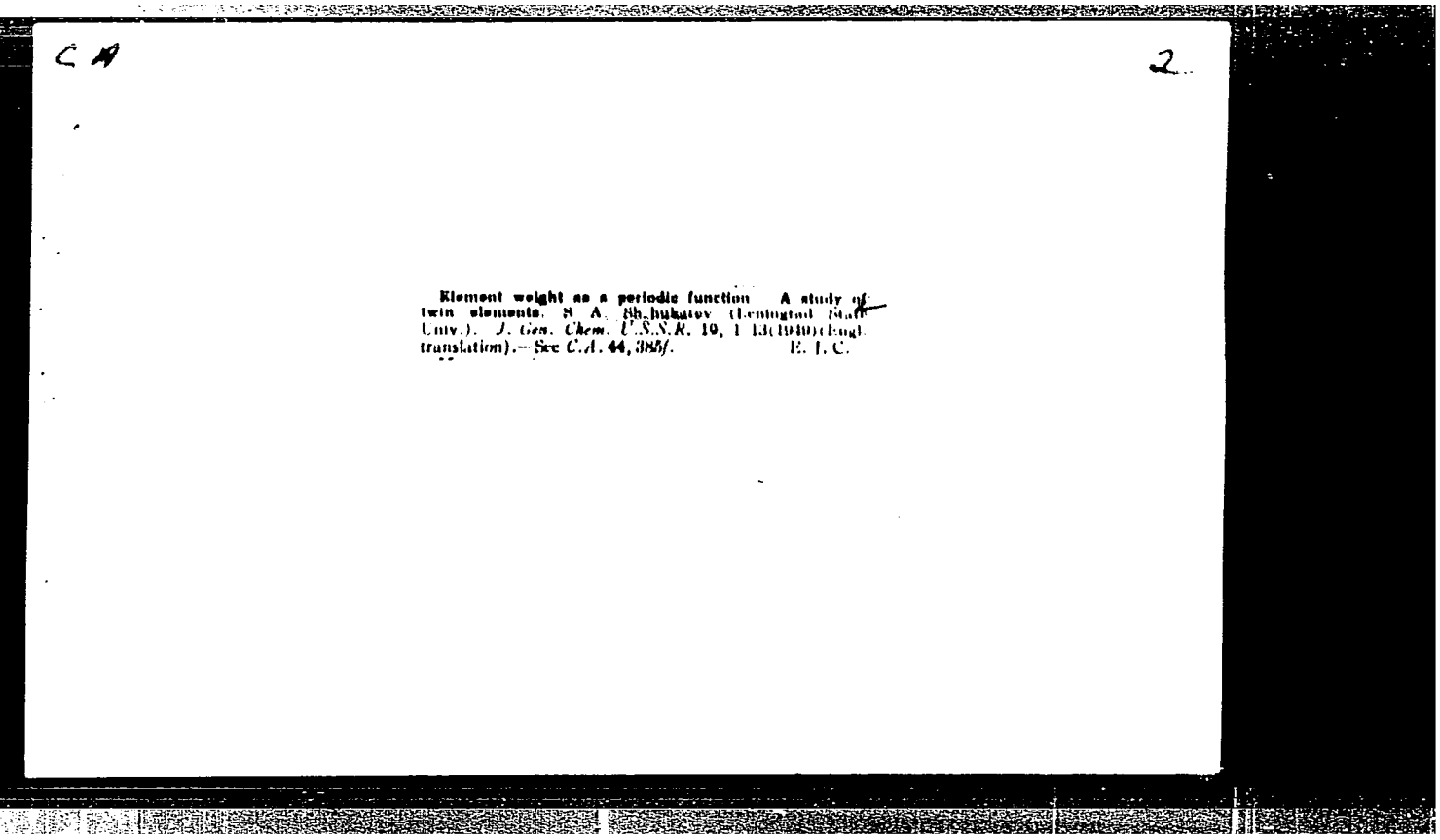
SHCHUKAREV, S.A., prof.

Theory of definite and indefinite compounds in the works of Russian scientists. Vest. LGU 2 no.5:5-25 My '47. (MIRA 12:9)

(Chemistry, Physical and theoretical)

SHCHUKAREV, S.A., prof.

D.I. Mendeleev and Leningrad University. Vest. LGU 2 no.6:148-154 Je '47. (MIRA 12:9)
(Mendeleev, Dmitrii Ivanovich, 1834-1907)



C A

2

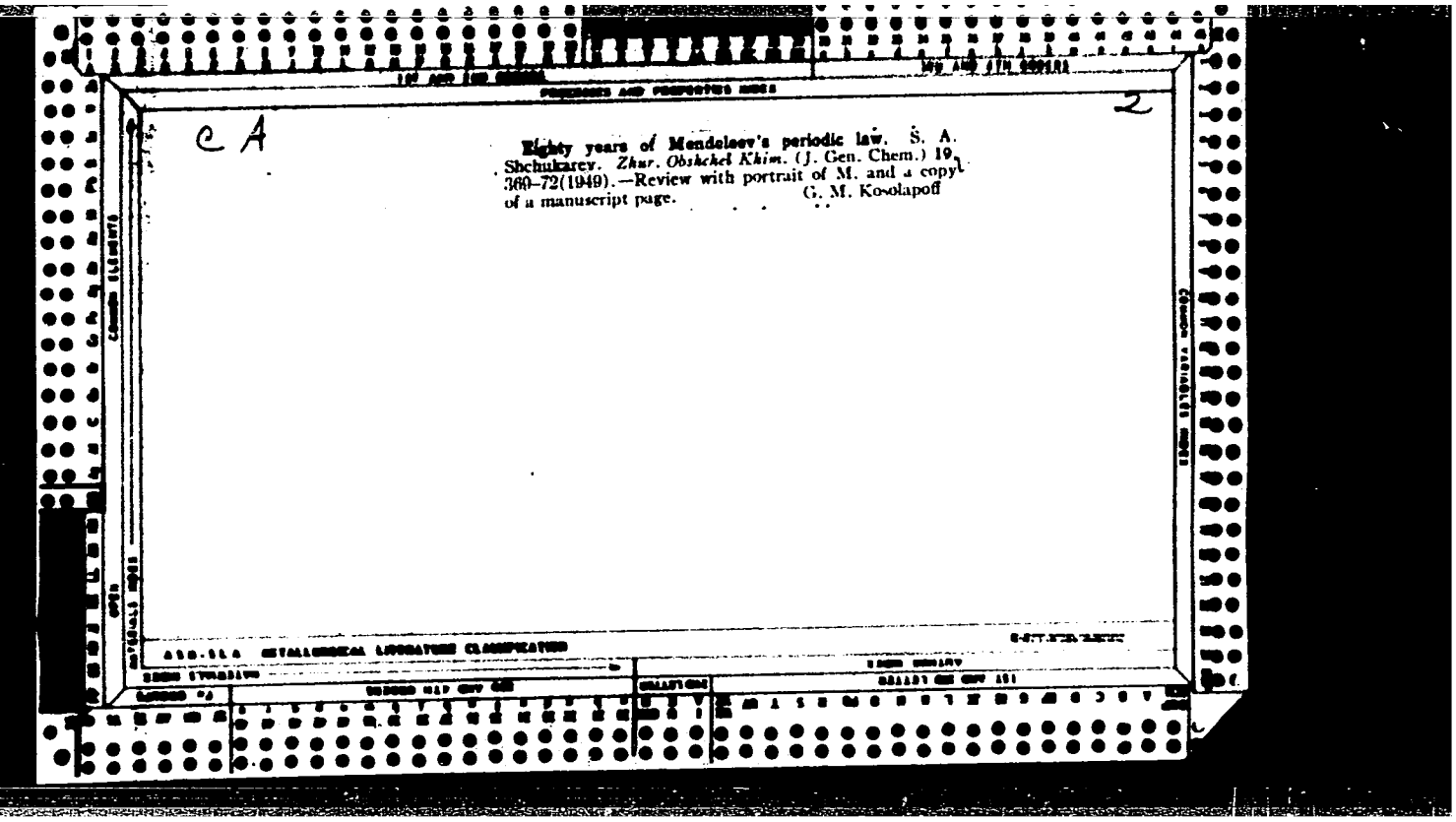
Element weight as a periodic function. A study of twin elements. S. A. Shchukarev (Leningrad State Univ.). *J. Gen. Chem. U.S.S.R.* 10, 1 13(1940) (Engl. translation).—See *C.A.* 44, 385*f*. E. J. C.

2

CA

The element (atomic) weight as a periodic function and the theory of twin elements. S. A. Shchukarev. *Zhur. Obshchei Khim.* (J. Gen. Chem.) 19, 3-15(1949).—The term "element wt." (*E*), first used by Mendeleev, is preferred to "at. wt." which is more appropriate for isotopes. Twin elements are pairs of neighboring elements differing in *E* by approx. 1 unit. There are 19 such cases in the periodic system. In these pairs the preceding element may be either a perissad (an element with an odd at. no.) or an artiad (an element with an even at. no.). The 1st occurrence is the rule up to Ga, the 2nd is the rule beyond Ga. In the plot of $N - P$ (no. of neutrons minus no. of protons in the nucleus) against *P*, the lines of perissads and artiads intersect at Ga. If all elements the principal isotopes of which differ in *E* by approx. 1 unit are included under "twins," there are 30 such pairs. If, further, main isotopes that would differ in *E* by approx. 1 unit, but for artiad deviations, are included, there are 17 more pairs. Ga has no twin; Cm is paired with the element no. 97. The system of main isotopes has 2 isoneutronic portions, one on the isoneutron (line of equal *N*) 82 (Ba^{138}-La^{139}-Ce^{140}-Pr^{141}), and one on 126 (Pb^{208}-Bi^{209}-Po^{210}-At^{211}). The isoneutrons 39, 82, and 126 divide the system into 4 regions. $_{31}Ga^{69}$, situated on the 38th isoneutron, and $_{51}Sb^{121}$, on the 82nd, differ by 70 nucleons (26 protons, 44 neutrons); $_{3}Li^{6}$ and $_{51}Sb^{121}$ also differ by the same nos. of protons and neutrons. A further manifestation of nuclear periodicity appears in the plot of $E - 2P$ as a function of *P*, showing complex max. around A, Kr, Xe, and Rn, indicating a periodic tendency to an increase of the no. of excess neutrons. Isoneutronic portions give rise to a saw-like appearance of the curve which disappears if the curve is split into two, one for artiads and one for perissads. There is an evident periodicity in the structure of the nuclei, although it is less simple than the periodicity of outer-electron envelopes.

N. Thon



CA

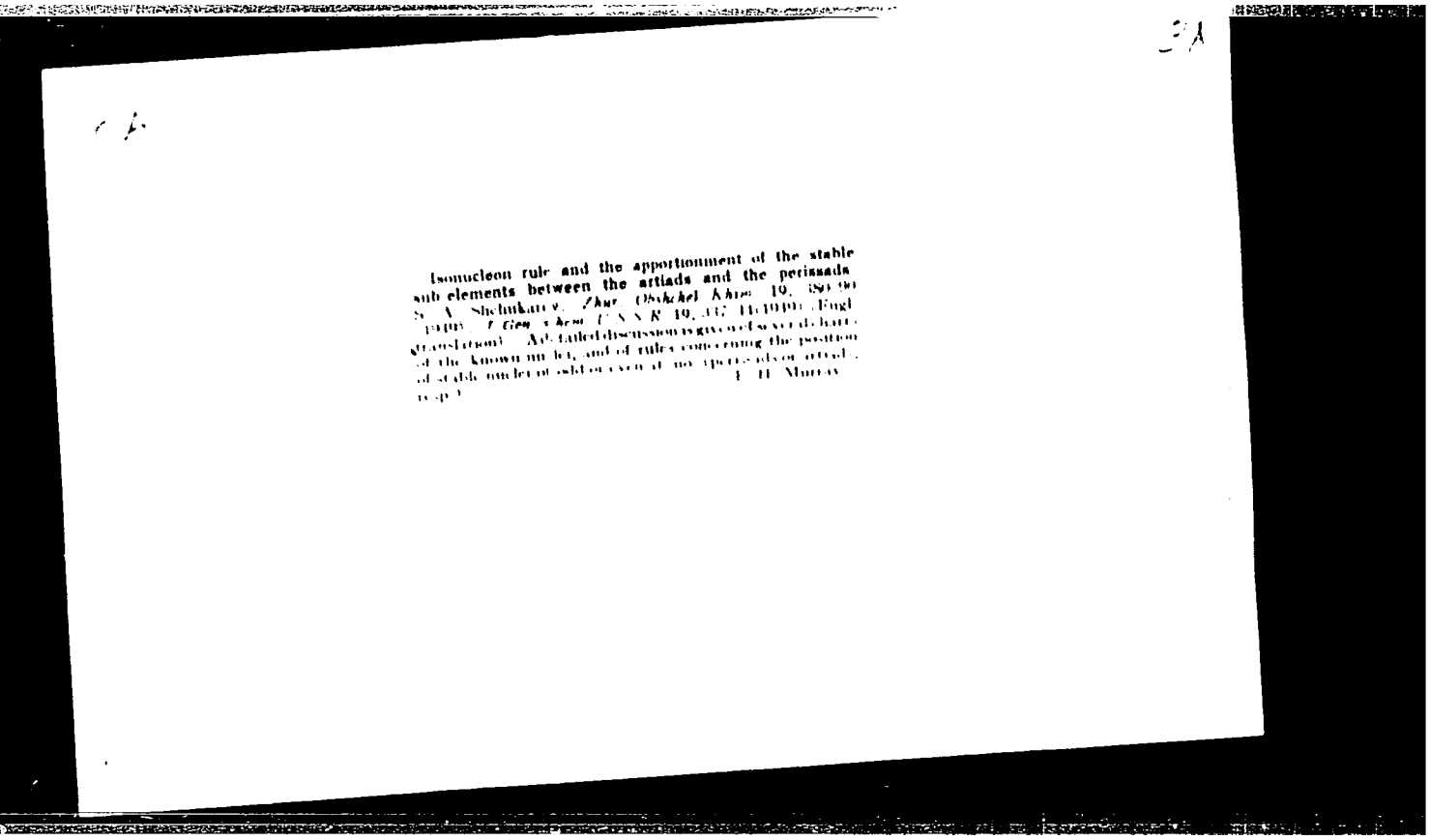
2

Eighty years of Mendeleev's periodic law. S. A. Shchukarev. *Zhur. Obshchel Khim.* (J. Gen. Chem.) 19, 360–72(1949).—Review with portrait of M. and a copy of a manuscript page. G. M. Kosolapoff

CA

2

So-called anomalies and degenerated anomalies of atomic weights. N. A. Shchukarev (Leningrad State Univ.). *Zhur. Obshchei Khim.* 19, 373-9(1949); *J. Gen. Chem. U.S.S.R.* 19, 329-35(1949)(Engl. translation).— Graphs for all known nuclei are used in a discussion of cases where the order of at. wts. of natural mixts. of isotopes differs from that of the periodic table of elements.
F. H. Murray



Isonucleon rule and the apportionment of the stable sub elements between the artiads and the perissads
S. A. Shchukarev, Zhur. Obshchei Khim. 19, 589-90 (1949). J. Gen. Chem. (U.S.S.R.) 19, 617-18 (1949). (Engl. translation). A detailed discussion is given of several charac. of the known nuclei, and of rules concerning the position of stable nuclei established even at the present time. J. W. Murray

Missing perissads and artiads that have no stable odd sub-elements. S. A. Shchukarev (Leningrad State Univ.). *Zhur. Obshchei Khim.* 19, 391-5(1949). *J. Gen. Chem. U.S.S.R.* 19, 345-8(1949) (Engl. translation). A discussion of certain analogies between the artificial elements Tc, Pm, At, Fr, and elements A and Ce which have no stable isotopes of odd mass numbers. F. H. Murray

SHCHUKAREV, S.A.

The nature of solutions of iodine. I. Spectrophotometric study of reaction of iodine with organic molecules in solutions. S. A. Shchukarev and L. S. Lilich. *Uchenye Zapiski Leningrad. Gos. Ordena. Univ. im. A. A. Zhdanova* No. 155; *Ser. Khim. Nauk* No. 11, 3–15(1952).—Spectrophotometric studies showed that I_2 and many org. solvents form 1:1 molar complexes whose stability and degree of dissocn. depend on the nature of the org. component. The following solvents were used: pyridine, quinoline, Et_2S, $(PhCH_2)_2S$, Pr_2S, EtSAm, Ph_2S, $(PrS)_2$, iso-Am_2Se, dioxane, and BuOH. Erratic results were obtained with O-contg. solvents, apparently owing to relatively low binding energy in complexes with such solvents. The coeff. of distribution of I_2 in CCl_4 vapor is const. as proved by spectrophotometric detns., which give a straight-line plot of concn. in the vapor vs. that in soln. up to 14 mole/l. concn. G. M. K.

5

CH

Thermodynamic processes in the reduction of iron chloride and iron bromide. G. I. Novikov, M. A. Oranskaya, and S. A. Shchukarev. *Uchenye Zapiski Leningrad. Gosudarst. Univ. im. A. A. Zhdanova* No. 155, *Ser. Khim. Nauk*, No. 11, 10–21(1952).—The equil. consts. were evaluated experimentally for the reduction by H of $FeCl_2$ at 696, 746, and 796°K. and of $FeBr_2$ at 726, 796, and 826°K. The free energy, entropy, and enthalpy values were calcd. from the exptl. data and agreed well with accepted values. J. R. L.

(2)

USSR/Chemistry - Physical Chemistry Aug 52
Iodine

"The States of Iodine in Several Organic Solvents," S. A. Shchukarev, L. S. Lilich and A. B. Sheynin

"DAN SSSR" Vol 85, No 6, pp 1333-1335

It is believed that a coordination bond arises between the I and the volvent mol when I is dissolved in an org solvent. In the present work, I is dissolved in varying concns in solvents (CCl_4, C_4H_9Cl, C_2H_5Br, C_4H_9Br, and C_2H_5I) and the vapor pressures of I noted. It is found

238T18

to decrease in the following order: $CCl_4 > RCl > RBr > RI$. The vapor pressure of I_2 over CCl_4 follows Henry's Law of satn. The degree of interaction of I with the solvent increases with the degree of the electron-donating properties of the solvent. The hypothesis of the formation of a coordination-covalent bond between the I and the solvent is confirmed. Presented by Acad A. N. Terenin 18 Jun 52

238T18

1. [redacted], S. A.; [redacted], A. P.

2. USSR (600)

4. Spectrum, Ultraviolet

7. Investigation colorimetric analysis in the ultraviolet region of the spectrum, Zhur. anal. Khim. 8, No. 1, 1953.

9. Monthly List of Russian Accessions, Library of Congress, May 1953. Unclassified.

SHCHUKAREV, S.A.; VASIL'KOVA, I.V.

Phenomenon of secondary periodicity as examplified by magnesium compounds with the elements of the main subgroup of the fourth group of D.I. Mendeleev's periodic system. Vest. LGU 8 no.2: 115-120 F '53. (MIRA 12:7)

(Periodic law) (Magnesium compounds)

SHCHUKAREV, S.A.; ARIYA, S.M.; LAKHTIN, G.I.

Thermochemistry of magnesium compounds with the elements of the main subgroup of the fifth group. Vest. LGU 8 no.2:121-126 F '53. (MLRA 12:7)

(Magnesium compounds) (Thermochemistry)

SHCHUKAREV, S. A.

SHCHUKAREV, S. A.

3

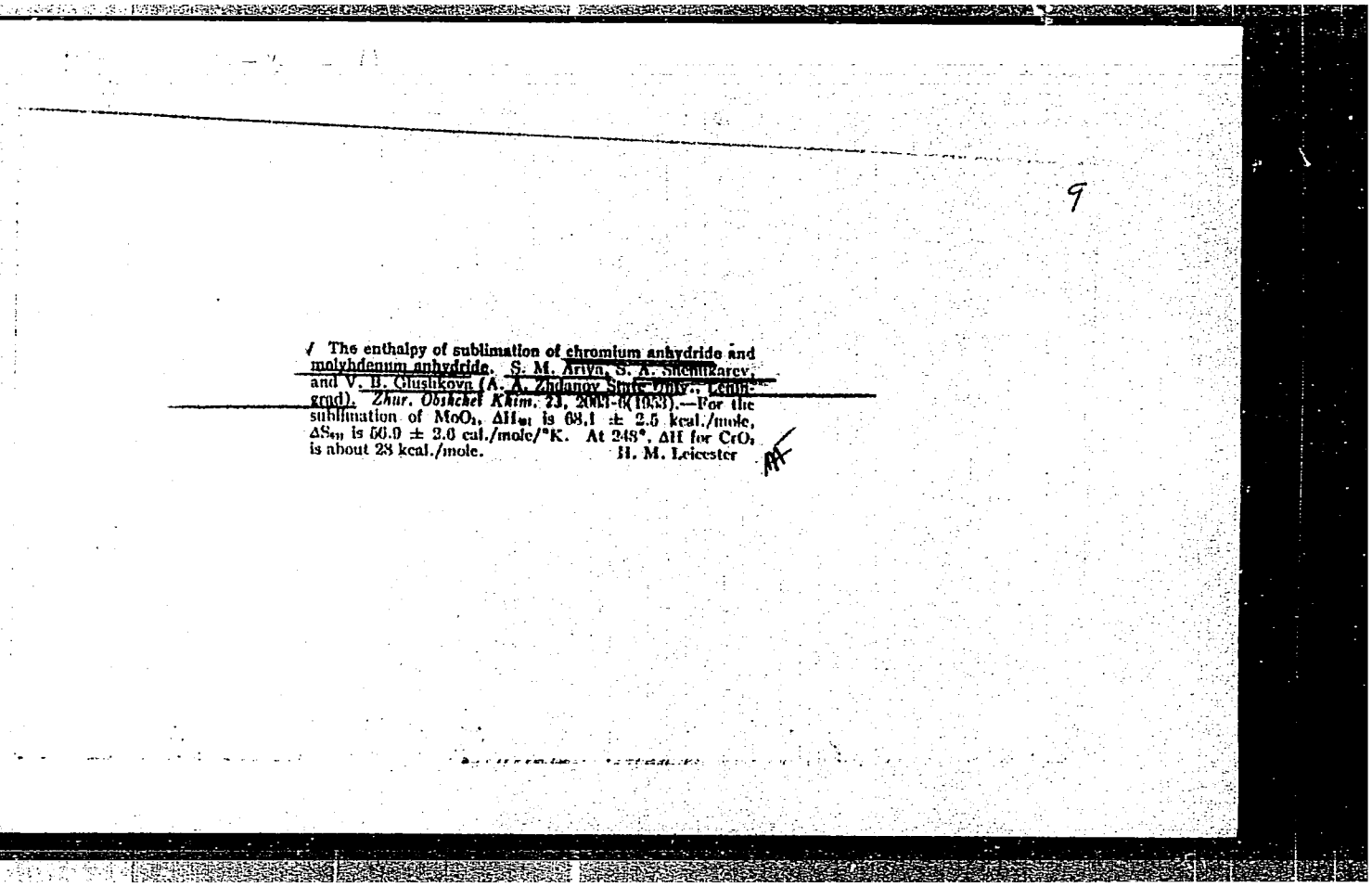
USSR

✓Gravimetric method for measuring the pressure of a saturated vapor. G. I. Novikov and S. A. Shchukarev. *Uchenye Zapiski, Leningrad. Gosudarst. [illegible] Zhdanova* No. 163, *Ser. Khim. Nauk* No. 12, 37–40(1953).—A static gravimetric method is described for the measurement of the pressure of a satd. vapor which is useful in the case of high-boiling and chemically active substances. The method was applied to the vapors of WCl_6 over the temp. range 156–353°. The data appear to be a good continuation of those obtained by Vernon (*C.A.* 31, 8285[3]) at low temps. The heat of vaporization was calcd. and found to be equal to 13.7 kcal./g. mole. J. Rovtar Leach

SHCHUKAREV, S A

4

Chromium dioxide, its preparation, properties, and enthalpy of formation. S. M. Ariya, S. A. Shchukarev, and V. B. Glushkova. *Zhur. Obshchei. Khim.* 23, 1241–5 (1953).—CrO_2, prepd. by the decompn. of CrO_3 at 420–450° under an O_2 pressure of 200–300 atm., has a tetragonal crystal structure and the dimensions of the elementary cell are $c = 5.77 \pm 0.02$ A., $a = 4.304 \pm 0.15$ A. ($c/a = 1.31$). The cell contains 4 Cr atoms and 8 O atoms. CrO_2 is ferromagnetic with a Curie temp. of 115°. Values of the magnetic permeability above the Curie temp. show that the compd. is a true dioxide and not a mixed oxide (Cr_2O_3–CrO_3). The enthalpy for the formation of CrO_2 is 139.4 ± 0.5 kcal. J. Rovtar Leach



9

The enthalpy of sublimation of chromium anhydride and molybdenum anhydride. S. M. Ariya, S. A. Shchukarev, and V. B. Glushkova (A. A. Zhdanov State Univ., Leningrad). *Zhur. Obshchei Khim.* 23, 2061-6(1953).—For the sublimation of MoO_3, ΔH_{sub} is 68.1 ± 2.5 kcal./mole, ΔS_{sub} is 50.0 ± 3.0 cal./mole/°K. At 248°, ΔH for CrO_3 is about 28 kcal./mole. H. M. Leicester

SHCHUKAREV, S.A.

(3)

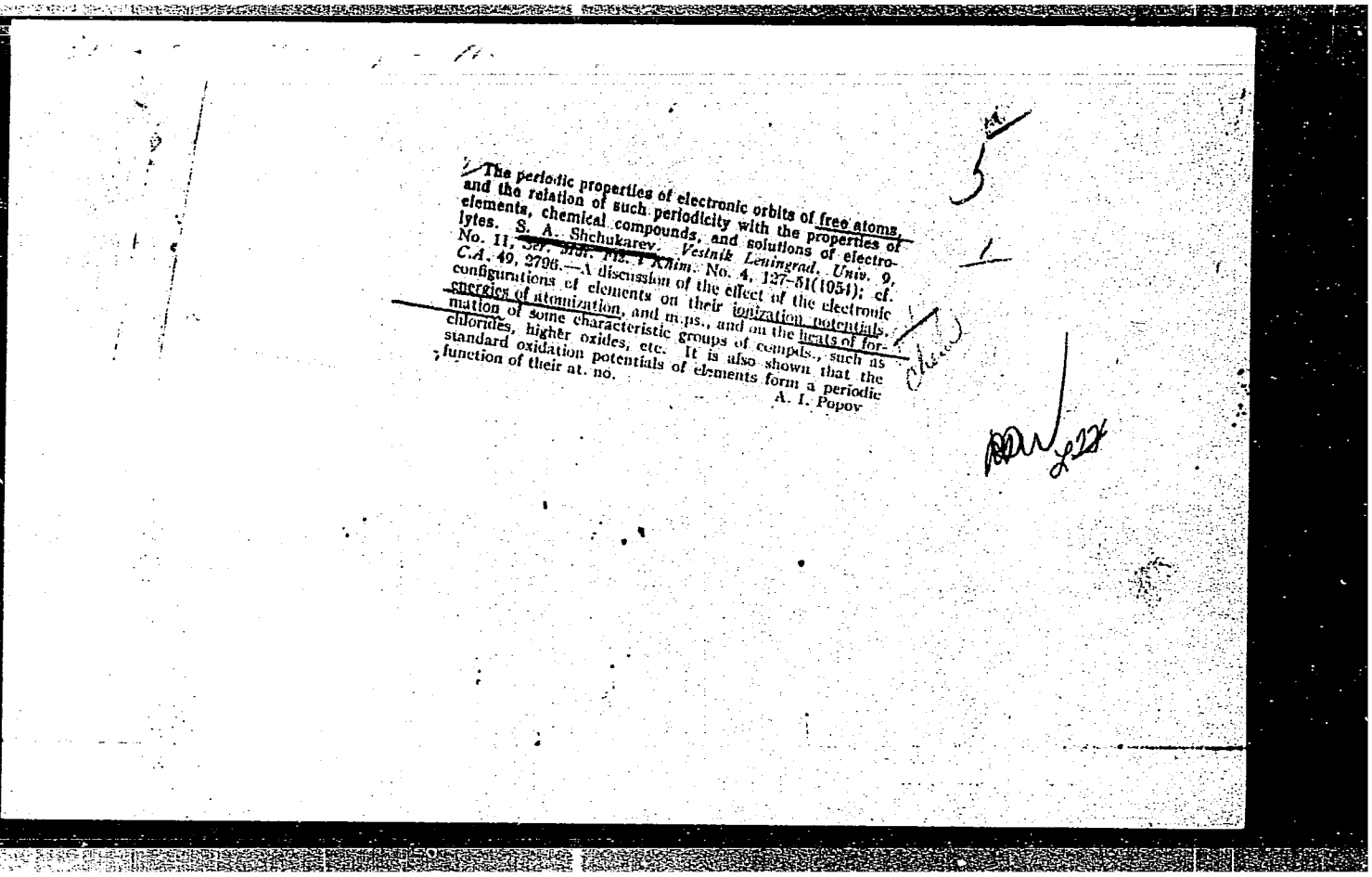
The heats of reaction of hydrates of oxides of zinc, copper (II), and barium with hydrochloric and nitric acids and hydrogen halide acids. S. A. Shchukarev, L. S. Lilich, and V. A. Latysheva. *Doklady Akad. Nauk S.S.S.R.* 91, 273–6(1953).—It is known that ions of Zn and Cu(II) in water soln. can form unstable complex ions with halogen ions. Therefore it was reasonable to expect that for Zn and Cu the effects of neutralization by acids differing by nature of anions would not be equal. Heat effects of reaction of $Zn(OH)_2$, $Cu(OH)_2$, and $Ba(OH)_2$ with 2*N* HCl, HBr, HI, $HClO_4$, and HNO_3 were detd. by direct method with acid always in large excess. HCl and HNO_3 were used for comparison as anions which develop min. tendency toward complex formation. Heat effects for $Ba(OH)_2$ were approx. equal for all acids used, corresponding to Thomsen's results. ZnO in 2*N* HCl coincided with Peppler's results. Heat effects for $Zn(OH)_2$, ZnO, and $Cu(OH)_2$ in the indicated acids are not equal and increase with transition from Cl^- to I^-, ClO_4^-, and NO_3^-, which affirms the reaction of Zn^{++} and Cu^{++} with anions in soln. The differences between ZnO and $Zn(OH)_2$ in all acids are almost equal and correspond to the literature consts. for hydration of ZnO with formation of $Zn(OH)_2$. Heat effects may attest to reactions between components of soln. but give no basis for detn. of thermal stability and compn. of complex ions formed.

V. N. Bednarski

10-13-54 ME

SHCHUKAREV, S A

First scientific works of D. I. Mendeleev as a stage in the discovery of the periodic law. S. A. Shchukarev and R. B. Dobrotin. *Vestnik Leningrad. Univ.* 9, No. 4, *Ser. Mat., Fiz. i Khim.* No. 1, 105-77(1954).—Historical sketch of the early work of M. on crystal forms and specific vols. of chem. substances as forerunners of the development of the periodic system. 34 references.
G. M. Kosolapoff



The periodic properties of electronic orbits of free atoms and the relation of such periodicity with the properties of elements, chemical compounds, and solutions of electrolytes. S. A. Shchukarev. *Vestnik Leningrad. Univ.* 9, No. 11, Ser. Mat. Fiz. i Khim. No. 4, 127–51(1954); cf. *C.A.* 49, 2796.—A discussion of the effect of the electronic configurations of elements on their ionization potentials, energies of atomization, and m.ps., and on the heats of formation of some characteristic groups of compds., such as chlorides, higher oxides, etc. It is also shown that the standard oxidation potentials of elements form a periodic function of their at. no.

A. I. Popov

SHCHUKAREV, S. A.

USSR/ Chemistry - Spectral analysis

Card 1/1 : Pub. 145 - 2/14

Authors : Shchukarev, S. A.; Andreyev, S. N.; and Sapozhnikova, O. V.

Title : Determination of small ketone amounts by colorimetering in the ultraviolet zone of the spectrum

Periodical : Zhur. anal. khim. 9/4, 193-195, Jul-Aug 1954

Abstract : The applicability of the colorimetering method for quantitative analysis of various aliphatic ketones was investigated. The objects used in this investigation were the following aqueous ketone solutions: acetone, methylethylketone, pentanone-2, hexanone-2, heptanone-2 and octanone-2. The relative accuracy of the analysis attained by this method was 0 - 15%. It was established that the colorimetering of acetone solutions in the presence of formaldehyde is possible also at a acetone-formaldehyde concentration ration of 1 : 100. Nine references: 2-English; 2-German and 5-USSR (1901-1953). Tables; graphs.

Institution : The A. A. Zhdanov State University, Leningrad

Submitted : December 9, 1953

SHCHUKAREV, S. A.

USSR.

Determination of aliphatic alcohols colorimetrically in the ultraviolet range of the spectrum. S. A. Shchukarev, S. N. Andreev, and I. A. Ostrovskaya [redacted] State Univ., Leningrad). *Zhur. Anal. Khim.* 9, 354–8(1954); cf. *C.A.* 47, 4783f.—The method utilizes ultraviolet absorption of alkyl nitrites. The latter are formed by the action of HNO_3 on alcs. according to: $ROH + HNO_3 = RNO_2 + H_2O$. The nature of R has an insignificant effect on the absorption. Alkyl nitrites have a wide absorption band in the range 400–320 mμ with 5 peaks at 380, 355, and 345 mμ. The detn. is carried out with a filter which screens out the 2 end peaks transmitting only in the range around 360 mμ. For the analysis take 20 ml. of H_2SO_4-washed petr. ether (35–100° fraction), 20 ml. of the soln. to be analyzed, and 1 ml. 5*N* HCl in a separatory funnel. To it add 3 ml. of 25% aq. $NaNO_2$ and shake the mixt. for 5 min. Transfer the petr. ether layer to another separatory funnel contg. 20 ml. of 10% $NaHCO_3$ or 0.1*N* NaOH. Shake the mixt. to remove N oxides, transfer the petr. ether layer to a cylindrical cell with quartz windows, and compare with a similar cell filled with pure petr. ether. Read the results on a calibration curve. Individual alcs. can be detd. with a relative error of 1–20%; the sum of alcs. can be detd. with a calibration curve prepd. with BuOH, with a relative error of 11–21%, MeOH excepted. M. Hoseh

SHCHUKAREV, S. A.

USSR/Chemistry

Card 1/1

Authors : Shchukarev, S. A.

Title : The periodical law of D. I. Mendeleyev as the basic principle of modern chemistry.

Periodical : Zhur. Obshchei Khim. 24, Ed. 4 581 - 592, April 1954

Abstract : The D. I. Mendeleyev periodical law, according to the author, should be considered as the basic principle of chemistry, controlling the intermittent, qualitative changes accompanying the conversion of one element into another and confirming the periodicity of these changes depending upon the behavior of the nucleus and external atomic electrons, qualitative changes in the consecutive series of elements oriented in the order of increase of nuclear charges ranging from hydrogen to centurium. Nine references; all USSR; 6 since 1950, 3 of earlier date. Tables, graphs.

Institution : .....

Submitted : February 1, 1954

SHCHUKAREV, S. A.

USSR/ Chemistry Synthesis methods

Card : 1/1 Pub. 151 - 1/33

Authors : Shchukarev, S. A., Morozova, M. P., and Prokofyeva, E. A.

Title : Higher barium phosphides

Periodical : Zhur. ob. khim. 24/8, 1277 - 1278, August 1954

Abstract : The derivation of higher barium phosphides (BaP_2 and BaP_3) in a state of thermal equilibrium at low P-vapor pressures, is described. The thermodynamic stability of BaP_2, a compound analogous to barium nitride, was found to be much higher than in the case of N-compound. The fluctuations in the formation enthalpy, during transition from one element into another, are explained. Three USSR references (1945 and 1953). Table.

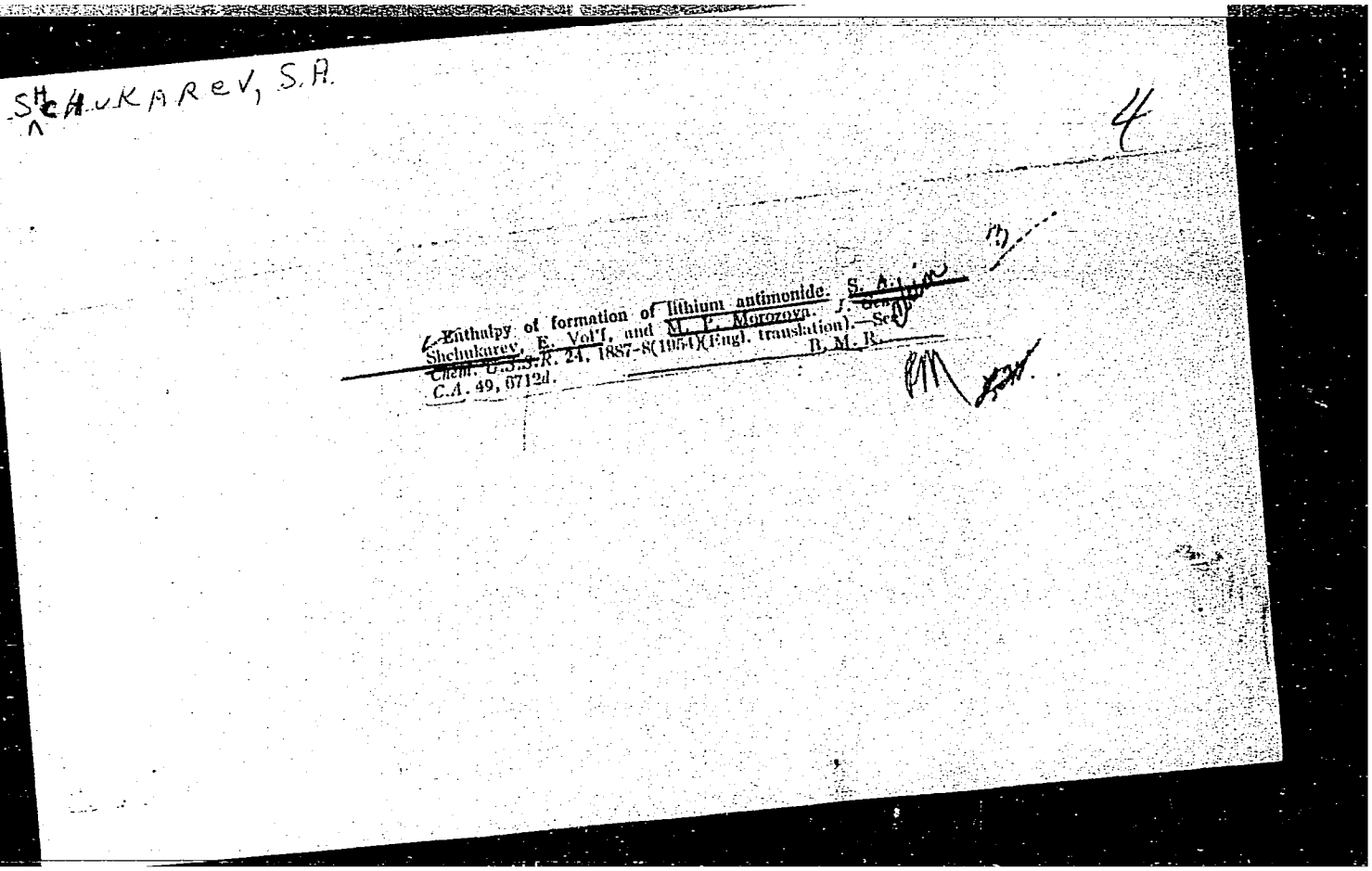
Institution : State University, Leningrad

Submitted : March 6, 1954

Shchukarev, S.A.

ENTHALPY OF FORMATION OF LITHIUM ANTIMONIDE.
S. A. Shchukarev, E. Vol'f, and M. P. Morozova (Leningrad State Univ.). Zhur. Obshchei Khim. 24, 1295-6(1954) Nov. (In Russian)

Heat of formation of Li_3Sb at 25°C was found to be −77.8 kcal/mole. (G.Y.)



SHCHUKAREV, S.A.

USSR

The thermal stability of copper halides. S. A. Shchukarev and M. A. Oranskaya (Leningrad State [illegible]). *Obshchei Khim.* 24, 1936–35(1954).—Dissocn. pressure for $CuCl_2$ was found to be: $\log P_{Cl} = 3.061 - (3113.6/T)$ from 219 to 436°, $\log P_{Cl} = 8.508 - (6979.2/T)$ above 436°. For $CuBr_2$: $\log P_{Br} = 6.172 - (3598.3/T)$ from 130 to 316°. For CuCl: $\log P_{Cl} = 5.012 - (13909/T)$ from 250° to 350°. For CuBr: $\log P_{Br} = 6.600 - (11126/T)$ from 300° to 350°. The following data are reported for temp. range in °K., ΔH (kcal./mol.), ΔS, ΔF_{298} (kcal./mol.), ΔH_{298} (kcal./mol.), ΔS_{298}: CuCl, 523–623, —, —, −27732, −31.9, −12.8; $CuCl_2$, 402–768, —, —, −31400, −41.2, −32.9; CuBr, 573–623, −25.4, −15.1, −21959, —, —; $CuBr_2$, 403–589, −32.0, −26.3, −24210, —, —. In the case of bromides the thermodynamic quantities are computed for formation from gaseous Br_2. Curve of $\log K$ vs. $1/T$ for CuBr has two breaks, one at 480 corresponding to the m.p. and the other at about 380 corresponding to cryst. transformation.

V. N. Badaraski

SHCHUKAREV, S.A.

SHCHUKAREV, S.A.; TOLMACHEVA, T.A.; ORANSKAYA, M.A.

Thermal stability of cobalt and nickel halides. Zhur.ob.khim.24 no.12:2093-2109 D '54. (MLRA 8:3)

1. Leningradskiy gosudarstvennyy universitet.
(Halides)

Shchukarev, S. A.

USSR

6340* Roles of Ionization Potentials in the Thermodynamics of Halides of the Metals of the Inserted Decade of the Fourth Period of D. I. Mendeleev's System. **O roli ionizatsionnykh potentsialov v termodinamike galogenidov metallov vstavnoi dekady chetvertogo perioda sistemy D. I. Mendeleeva.** (Russian.) S. A. Shchukarev and M. A. Oranskaia. *Zhurnal Obshchei*

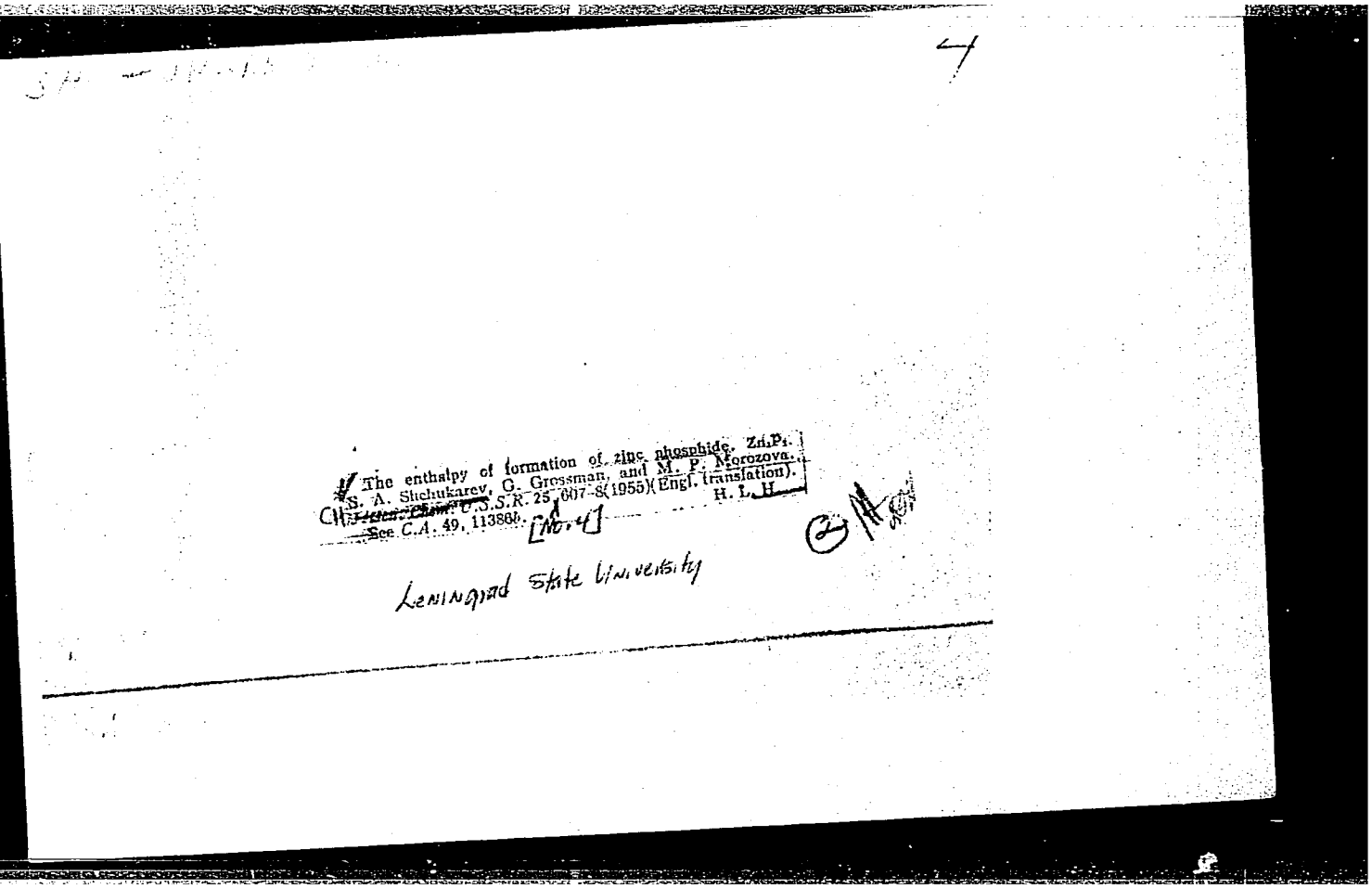
Khimii, v. 24, no. 12, Dec. 1954, p. 2109-2119.
Includes tables, graphs. 18 ref.

SHCHUKAREV, S.A.; DOBROTIN, R.B.

New manuscript of E.S.Fedorov on the periodic law. Kristallografiia no.3:81-84 '55. (MLRA 10:2)
(Periodic law)

USSR.

2400. Method of analysis of tungsten chlorides. S. A. Shchukarev, G. I. Novikov and N. V. Andreeva (*Zavod. Lab.*, 1965, 21 [4], 401–403).—It is shown that WCl_6 boiled with water, or heated in an atmosphere containing water vapour, is completely hydrolysed and can be determined from the amount of HCl produced. The material is placed in a crucible supported inside and near the closed end of an inverted test-tube. The open end of the test-tube stands in a beaker containing a standard alkali solution. An electric heater round the closed end is available for heating the crucible to 150° to 200° C. The top of the crucible carries a capillary tube partly filled with water. When the heater is switched on, the water is forced into the crucible by the expansion of air in the capillary. After being heated for 1 to 1·5 hr. the crucible is removed and ignited in a muffle-furnace to give the weight of WO_3. Any residue on the walls of the test-tube is washed into the alkali soln. and the chloride is determined. The method is suitable also for the lower chlorides of tungsten and for many other hydrolysable chlorides. The apparatus can be used to remove and determine ammonium chloride in ammoniacal solutions of WCl_6. G. S. SMITH



4

The enthalpy of formation of zinc phosphide, Zn_3P_2.
S. A. Shchukarev, G. Grossman, and M. P. Morozova.
C[illegible] C.S.S.R. 25, 607-8(1955)(Engl. translation).
See C.A. 49, 11388b. H. L. H

[No. 4]

Leningrad State University

Shchukarev, S. A.

USSR

The enthalpy of formation of zinc phosphide, Zn_3P_2. S. A. Shchukarev, G. Grossman, and M. P. Morozova (Leningrad State Univ.). *Zhur. Obshchei Khim.* 23, 633-4 (1953). The enthalpy of formation of Zn_3P_2 from the elements was detd. calorimetrically and found to be equal to -98 ± 3 kcal./mole. The course of the value of the enthalpy of formation for the compds. of Zn with N, P, and As, follows the rule of secondary periodicity (cf. Biron, *C.A.* 9, 3000). J. Rovtar Leach

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(2)

SHCHUKAREV, S.A.

CHV The effect of the concentration of acids on the heat effect of their reaction with the hydrates of zinc and barium oxide. S. A. Shchukarev, L. S. Lilich, and V. A. Lalyshcva. (Leningrad State Univ.) *Zhur. Obshchei Khim.* 25, 1444–8 (1955); cf. *C.A.* 48, 8019c.—The heat effect of the reaction of HCl, in large excess, with $Ba(OH)_2$ was independent of the acid concn. The heat effect for the reaction of $Zn(OH)_2$ with the following acids was studied: HCl, HBr, HI, and $HClO_4$. The acid concn. in these cases had a significant effect. For HCl, HBr, and HI the curve of enthalpy vs. concn. passed through a min. For $HClO_4$, an increase in concn. produced a progressive decrease in the enthalpy. The heats of hydration of Ba^{++} and Zn^{++} were calcd. to be 813 and 499 kcal., resp. J. Rovtar Leach

(2)

Shchukarev, S. A.

4000

The study of complex compounds in solution by their absorption spectra. S. A. Shchukarev and O. A. Lobaneva. *Doklady Akad. Nauk* [illegible] 1-3(1955).—The bivalent Ni and Co compds. were studied by a spectrophotometric method which allowed conclusions regarding complex formation in soln., and their forms. In the method, the max. absorption bands of the different complexes are singled out from the total absorption. The method consists in measuring the absorption-change curves of definite compds., combined with Bjerrum's formation-function method (*C.A.* 40, 4590[1]). Chemically pure, anhyd. $CoBr_2$, $NiBr_2$, LiCl, and acetone were titrated in a visual vertical colorimeter having 6 air-filters, with a transmission range of 4200–7500 A. The absorption bands were measured on a quartz differential spectrophotometer. The construction of the calibration curves is described, for the colorimetric titration, and how conclusions can be drawn from the curves is discussed.

W. M. Sternberg

Shchukarev, S A

Thermal dissociation of platinum halides. I. Platinum bromides. S. A. Shchukarev, T. A. Tolmacheva, M. A. Oranskaya, and L. V. Komandrovskaya. *Zhur. Neorg. Khim.* 1, No. 1, 8–16(1956).—The dissocn. pressures of PtBr, $PtBr_2$, $PtBr_3$, and $PtBr_4$ were measured and the free energies, enthalpies, and entropies of formation were calcd. therefrom. For $2PtBr_4 = 2PtBr_3 + Br_2$, $\Delta H = 20.8$ kcal./mole, $\Delta S = 35.7$ e.u./mole, $\Delta F_{298} = 10.7$ kcal./mole; $p_{Br_2} =$ 12 mm. at 200°, 66.5 mm. at 240°, and 291 mm. at 280°. For $2PtBr_3 = 2PtBr_2 + Br_2$, $\Delta H = 22.0$ kcal./mole, $\Delta S =$ 33.0 e.u./mole, $\Delta F_{298} = 12.2$ kcal./mole; $p_{Br_2} = 24$ mm. at 280°, 126 mm. at 330°, and 665 mm. at 390°. For $2PtBr_2 = 2PtBr + Br_2$, $\Delta H = 23.6$ kcal./mole, $\Delta S = 27.9$ e.u./mole, $\Delta F_{298} = 15.3$ kcal./mole; $p_{Br_2} = 36$ mm. at 420°, 90 mm. at 460°, 208 mm. at 500°. For $2PtBr = 2Pt + Br_2$, $\Delta H = 21.5$ kcal./mole, $\Delta S = 21.9$ e.u./mole, $\Delta F_{298} =$ 15.0 kcal./mole; $p_{Br_2} = 18$ mm. at 460°, 32 mm. at 490°, and 46 mm. at 510°. At 67°ΔF is 0 for the disproportionation reaction $2PtBr = PtBr_2 + Pt$. PtBr exists only above that temp. II. Platinum chlorides. S. A. Shchukarev, M. A. Oranskaya, and T. S. Shemyakina. *Ibid.* 17–23.—The dissocn. pressures of PtCl, $PtCl_2$, $PtCl_3$, and $PtCl_4$ were measured. The enthalpies and entropies of formation were calcd. Estd. ΔF for the Pt chlorides was compared with corresponding values for bromides and iodides. For

Theodore H. Rautenberg (General Elec. Research Lab., Schenectady, N.Y.). *J. Phys. Chem.* 60, 379–81(1956).—CS_2–NO mixts. were ignited in a 5-cm.-diam. spherical SiO$_2$ vessel at temps. as low as 775°. The explosion limits were of the thermal type and were expressed approx. by log $(P/T) = A/T + B$ at pressures above about 20 cm. for mixt. compn. ratios of NO/CS_2 from 1 to 8. The thermal nature of the explosion limit was confirmed by expts. with the addn. of inert gases to the mixt. A slow reaction was observed below the explosion limit. At 750° the reaction was 2nd order with respect to NO and 1st order with respect to CS_2. An activation energy of 70 kcal./mole was calcd.

SHCHUKAREV, S.A.; ORANSKAYA, M.A.; SHEMYAKINA, T.S.

Thermal dossociation of platinum halides. Part 2. Platinum chlorides. (MLRA 9:10)
Zhur.neorg.khim.1 no.1:17-23 '56.
(Platinum chlorides) (Dissociation)

SHCHUKAREV, S. A.

USSR/Physical Chemistry. Thermodynamics, Thermochemistry, B-8
Equilibria, Physical-Chemical Analysis, Phase Transitions.

Abs Jour: Ref Zhur-Khimiya, No 5, 1957, 14645

Author : S. A. Shchukarev, M. A. Oranskaya, T. A. Tolmacheva, A. K. Yakhkind

Inst :

Title : Pressure of Saturated Vapor of Vanadium Tetrachloride

Orig Pub: Zh. neorgan. khimii, 1956, 1, No 1, 30-35

Abstract: The purpose of the work is to check the previously obtained data (Simons J. H., Powell M. G., J. Amer. Chem. Soc., 1945, 67, 75) and to enlarge the temperature range somewhat. VCl_4 was prepared by chlorinating aluminothermic V. A scheme of the chlorination installation is attached, the method of work is described. The pressure of the saturated vapor P_{VCl_4} was determined by the flow method permitting to compute the partial pressures of VCl_4 and Cl_2 separately. Dried and purified N_2 was used as a gas inert in reference to VCl_4. P_{VCl_4} was determined in

Card 1/2

B-8

USSR/Physical Chemistry. Thermodynamics, Thermochemistry,
Equilibria, Physical-Chemical Analysis, Phase Transitions.

Abs Jour: Ref Zhur-Khimiya, No 5, 1957, 14645

Abstract: the range from 0° to 90°. The following was found based on the experimental data: $\log P_{VCl_4}(mm) = -(2174 / T) + 5.19$; $L = 9.9 \pm 0.1$ kcal per mole; ΔS (vap.) = 23.8 entr. units. The checking of the data by the method of measuring the vapor pressure by boiling points within the range from 25 to 85° resulted in following values: $\log P_{VCl_4} = -(2185 / T) + 5.21$; $L = 10.0 \pm 0/1$ kcal per mole, ΔS (vap.) = 23.8 ± 0.4 entr. units. It follows from the concordance of the results of both these methods that VCl_4 in vapor form is a monomer.

Card 2/2

Shchukarev, S. A.

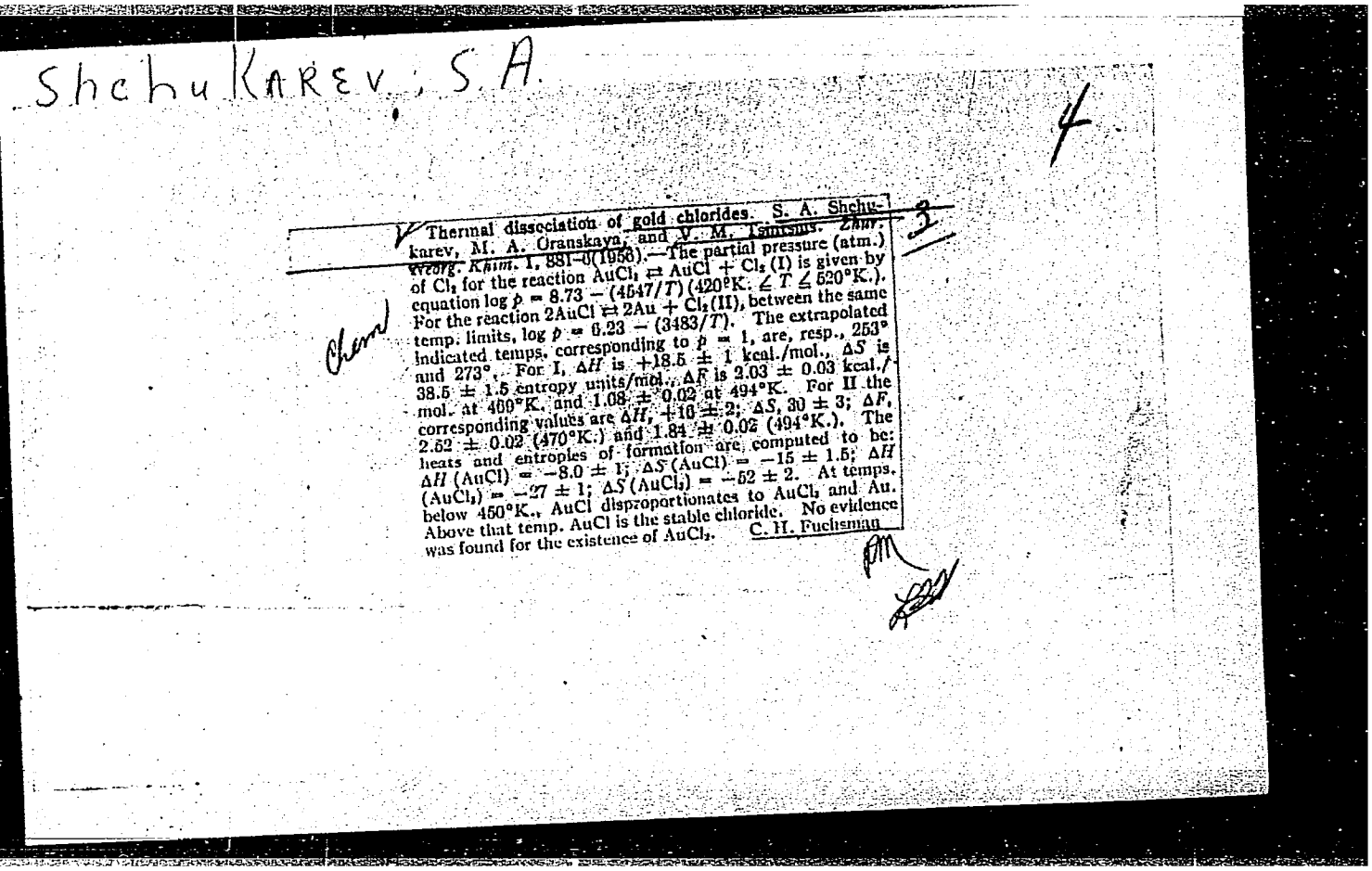
Thermodynamic study of some chlorine derivatives of tungsten. I. Saturated vapor pressure of the hexa-, penta-, and oxytetrachlorides of tungsten. S. A. Shchukarev and G. I. Novikov. *Zhur. Neorg. Khim.* 1, No. 3, 637–61(1956).—The vapor pressure of WCl_6 increases from 43 mm. at 215° to 752 mm. at 341°; of $WOCl_4$ from 38 mm. at 158° to 755 mm. at 223°; of WCl_5 from 4 mm. at 140° to 760 mm. at 286°. The heat of vaporization (kcal.) for WCl_6, WCl_5, and $WOCl_4$ from solid and liquid phases are, resp., 14.6, 12.6; 16.7, 15.7; 18.9, 16.2; with an uncertainty of ±0.5. The corresponding entropies of vaporization (entropy units) are 24.2, 20.4; 30.3, 28.3; 38.0, 32.6; with an uncertainty of ±1.0. The m.p. and b.p. are, resp., WCl_6 275°, 348°; WCl_5 230°, 286°; $WOCl_4$ 204°, 224°. The uncertainty in the m.p. is ±10°, in the b.p. ±2°.

C. H. Fuchsman

SHCHUKAREV, S.A.; NOVIKOV, G.I.

Reduction of cerium trichloride by hydrogen. Zhur.neorg.khim. 1 no.3:362-365 Mr '56. (MLRA 9:10)

(Cerium chlorides) (Reduction, Chemical)



Shchukarev, S.A.

4

Thermal dissociation of gold chlorides. S. A. Shchukarev, M. A. Oranskaya, and V. M. Tsimmus. *Zhur. Neorg. Khim.* 1, 881–6(1956).—The partial pressure (atm.) of Cl_2 for the reaction $AuCl_3 \rightleftarrows AuCl + Cl_2$ (I) is given by equation $\log p = 8.73 - (4547/T)$ (420°K. $\leq T \leq$ 520°K.). For the reaction $2AuCl \rightleftarrows 2Au + Cl_2$ (II), between the same temp. limits, $\log p = 6.23 - (3483/T)$. The extrapolated indicated temps. corresponding to $p = 1$, are, resp., 253° and 273°. For I, ΔH is +18.5 ± 1 kcal./mol., ΔS is 38.5 ± 1.5 entropy units/mol., ΔF is 2.03 ± 0.03 kcal./mol. at 469°K. and 1.08 ± 0.02 at 494°K. For II the corresponding values are ΔH, +16 ± 2; ΔS, 30 ± 3; ΔF, 2.52 ± 0.02 (470°K.) and 1.84 ± 0.02 (494°K.). The heats and entropies of formation are computed to be: ΔH (AuCl) = −8.0 ± 1; ΔS (AuCl) = −15 ± 1.5; ΔH ($AuCl_3$) = −27 ± 1; ΔS ($AuCl_3$) = −52 ± 2. At temps. below 450°K., AuCl disproportionates to $AuCl_3$ and Au. Above that temp. AuCl is the stable chloride. No evidence was found for the existence of $AuCl_2$. C. H. Fuchsman

SHCHUKAREV, S. A.

6

Thermal dissociation of chromium chloride and chromium bromide. S. A. Shchukarev, T. A. Tolmacheva, M. A. Oranskaya, and E. A. Nikolaeva. *Zhur. Neorg. Khim.* 1, 1697–702(1956).—The pressure of the thermal dissocn. of $CrCl_3$ and $CrBr_3$ was detd. by studying the equil. for the reduction of these compds. by H. Measurements were made in the temp. range 688–822°. The dissocn. pressures for $CrCl_3$ and $CrBr_3$ were calcd. for each temp. The enthalpy and entropy of formation were calcd., and the data were compared with those obtained by other investigators.
J. Rovtar Leach

Shchukarev, S. A.

7

The reduction of thorium tetrabromide with hydrogen. S. A. Shchukarev, [illegible] Novikov, and A. V. Suvorov. *Zhur. Neorg. Khim.* 1, 1948–53(1950).—Reduction of $ThBr_4$ with H at 360°, in the absence of moisture yields $ThBr_2$. ΔH and ΔS were computed for this and analogous reactions from exptl. data derived from the dynamic and static methods, resp. For $ThBr_4(s) + \frac{1}{2}H_2(g) = ThBr_3(s) + HBr(g)$ ΔH (kcal./mole) is 2.7 ± 0.3 and 2.1 ± 0.4; ΔS (entropy units) is -1.5 ± 0.1 and -3.1 ± 0.7.

C. H. Fuchsman

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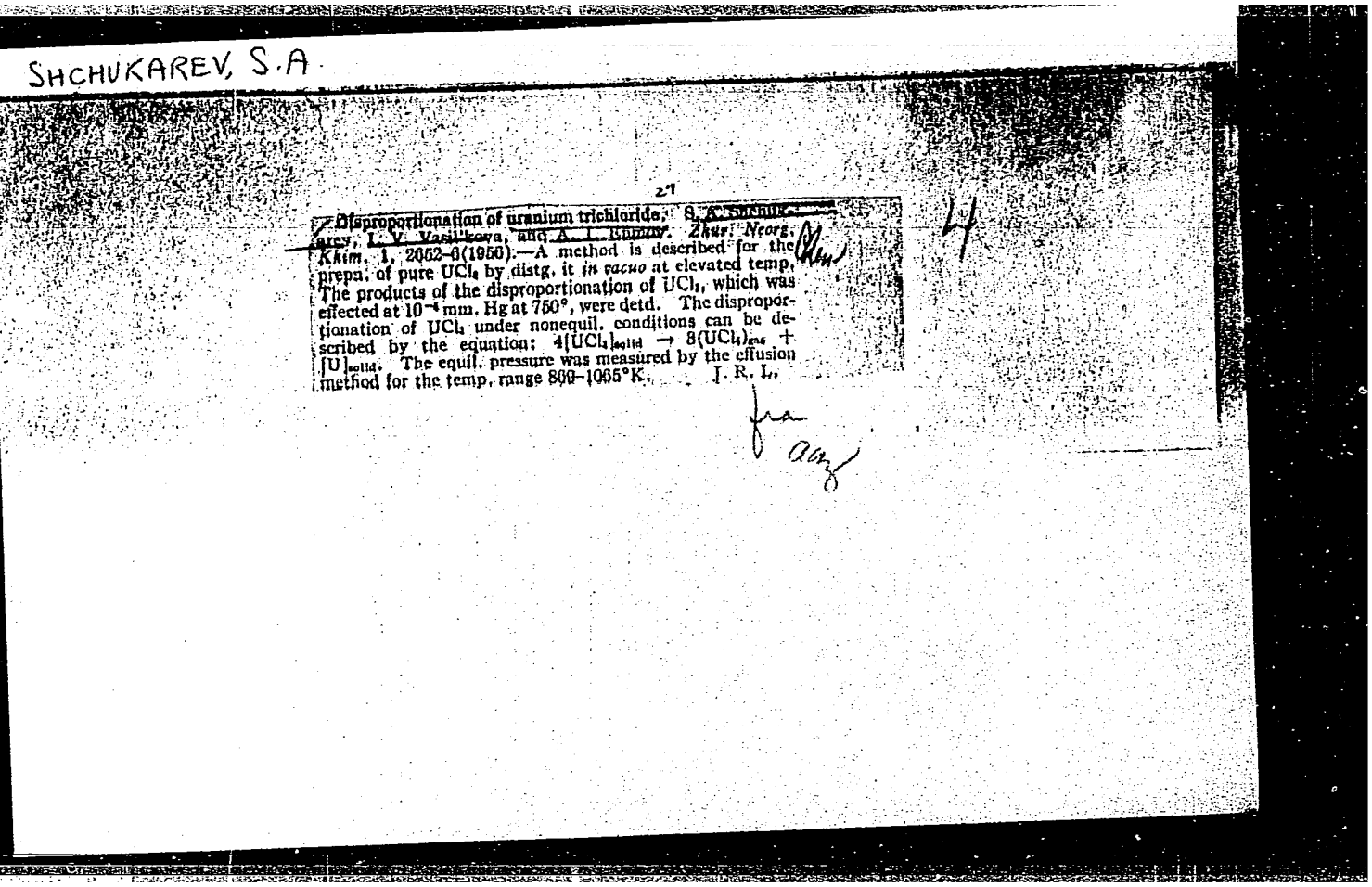
RM MK

SHCHUKAREV, S.A.

Determination of the vapor pressure of UCl_4 and of the disproportionation pressure of $UOCl_2$. S. A. Shchukarev, I. V. Vasil'kova, A. I. Efimov, and V. P. Kirdyashev. *Zhur. Neorg. Khim.* 1, 2272-7(1956).—The vapor pressure of solid UCl_4 was detd. over the temp. range 358–435° by the Knudsen effusion method. From these data the following values were calcd.: $\Delta H_{sublimation}$ = 46.9 kcal./mole; ΔF°_{298} = 33.1 kcal./mole; ΔS_{298} = 46 e.u. The disproportionation pressure of $UOCl_2$ was detd. for the temp. range 426–542°. The following values were calcd. from these data: ΔH = 53.8 kcal./mole; ΔF°_{298} = 40.1 kcal./mole; and ΔS_{298} = 45.0 e.u. $UOCl_2$ disproportionates according to the equation: $2UOCl_2 \rightleftharpoons (UCl_4)_{gas} + UO_2$.

J. Rovtar Leach



SHCHUKAREV, S.A.

27

Disproportionation of uranium trichloride. S. A. Shchukarev, L. V. Vasil'kova, and A. I. Rumov. *Zhur. Neorg. Khim.* 1, 2062–6(1956).—A method is described for the prepn. of pure UCl_4 by distg. it *in vacuo* at elevated temp. The products of the disproportionation of UCl_3, which was effected at 10^{-4} mm. Hg at 750°, were detd. The disproportionation of UCl_4 under nonequil. conditions can be described by the equation: $4[UCl_4]_{solid} \rightarrow 3(UCl_4)_{gas} + [U]_{solid}$. The equil. pressure was measured by the effusion method for the temp. range 800–1065°K. J. R. L.

4

Shchukarev, S. A.

The use of spectrophotometry to study complex formation in solutions. S. A. Shchukarev and O. A. Lobaneva. *Vestnik Leningrad. Univ.* 11, No. 10, *Ser. Fiz. i Khim.* No. 2, 64-73(1956).—The methods of Ostromuislenskii (*C.A.* 5, 1702), Job (*C.A.* 22, 2120); Bent-French (*C.A.* 35, 2058[4]); Vosburgh-Cooper (*C.A.* 35, 2085[4]); and J. Bjerrum (*C.A.* 40, 4500[1]) for the optical investigation of complex formation in solns. are discussed and compared. A new method is proposed for detg. the formulas of complex compds. in soln. The method is based on the spectrophotometry of those solns. for which the proper ligand-central ion ratio is selected by Bjerrum's method. The exptl. data show that as the no. of halogen ions in the complex increases, the absorption max. is displaced toward the longer wave lengths.

J. Rovtar Lesch

Shchukarev, S. A.

6

Thermal dissociation of the iodides of manganese, iron, and cobalt. S. A. Shchukarev, M. A. Oranskaya, and T. S. Bartnitskaya. *Vestnik Leningrad. Univ.* 11, No. 22, *Ser. Fiz. i Khim.* No. 4, 104–10(1956); cf. *C.A.* 49, 7358*d*.—MnI_2 is stable at least to 840° in the absence of O, but traces of O cause it to evolve I and turn brown, even at 100°. It can therefore be used for the *detection of traces of O* in other gases. Dissocn. pressure for FeI_2 was: $\log P_I = 4.14 - (6790.5/T)$ from 759 to 855°. For CoI_2: $P_I = 3.785 - (5202.5/T)$ from 631 to 704°. J. D. Porter

for Paaz